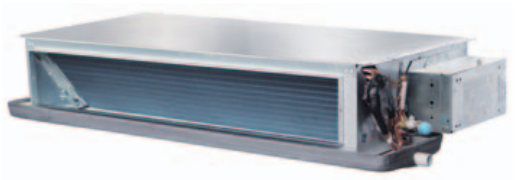
Haier

Commercial Air Conditioning

SERVICE MANUAL



Models

AD182ALERA **AD362AHERA**

- **Features**

- **High energy efficiency**
- **PAM control**
- **Can be connected with the universal outdoor unit**
- **Infrared control type or wired control type**
- **Low ambient cooling kit (optional) and low ambient heating kit (optional)**
- **New friendly refrigerant R410a, environment protection**
- **Weekly timer (standard)**
- **Group control function**
- **Auto restart function**

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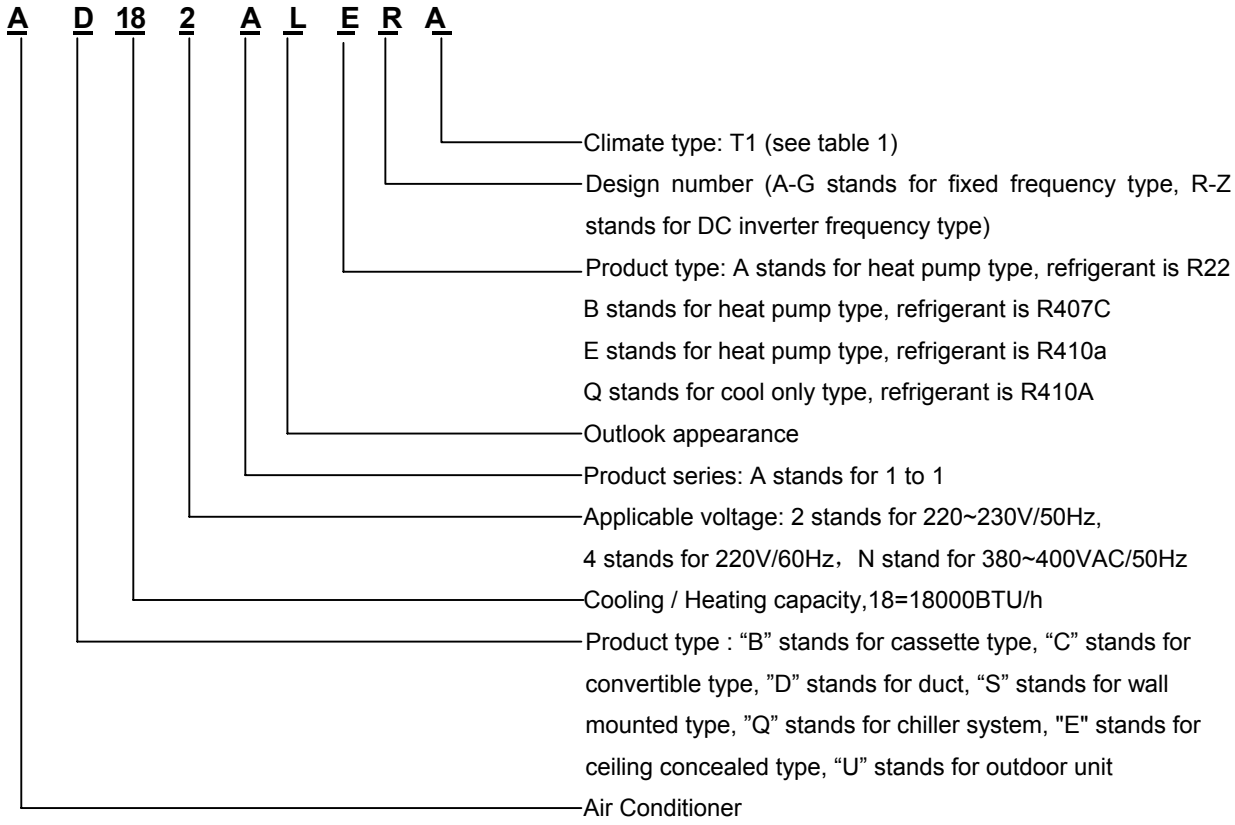
1.DESCRIPTION OF PRODUCTS & FEATURES

1.1 Products code explanation


A D 18 2 A L E R A
Climate type: T1 (see table 1)
Design number (A-G stands for fixed frequency type, R-Z stands for DC inverter frequency type)
Product type: A stands for heat pump type, refrigerant is R22
B stands for heat pump type, refrigerant is R407C
E stands for heat pump type, refrigerant is R410a
Q stands for cool only type, refrigerant is R410A
Outlook appearance
Product series: A stands for 1 to 1
Applicable voltage: 2 stands for 220~230V/50Hz,
4 stands for 220V/60Hz，N stand for 380~400VAC/50Hz
Cooling / Heating capacity,18=18000BTU/h
Product type : “B” stands for cassette type, “C” stands for convertible type, ”D” stands for duct, “S” stands for wall mounted type, ”Q” stands for chiller system, "E" stands for ceiling concealed type, “U” stands for outdoor unit
Air Conditioner

1.2 Brief Introduction for T1、T2、T3 working condition

Type of Air Conditioner	Climate type		
	T1	T2	T3
Cooling Only	18 ℃~43℃	10℃~35℃	21℃~52℃
Heat pump	-7℃~43℃	-7℃~35℃	-7℃~52℃
Electricity Heating	~43℃	~35℃	~52℃

1.3 Operating Range of Air Conditioners

Temp. / Mode			Rated	Maximum	Minimum
Cooling	Indoor	DB ℃	27	32	15
		WB ℃	19	23	14
	Outdoor	DB ℃	35	43	10
		WB ℃	24	26	6
Heating	Indoor	DB ℃	20	27	10
		WB ℃	14.5	---	--
	Outdoor	DB ℃	7	23	-10
		WB ℃	6	18	---

1.4 Product features

Adopt the much friendlier refrigerant R410a

The air conditioner system adopts the greatly friendly refrigerant R410a, which is protective for the ozone layer and is good to avoid the earth getting warmer. Benefit for the environment.

Universal outdoor unit

The outdoor unit has been uniformed which can be connected with different type indoor units with identical capacity such as cassette type, duct type, convertible type etc..

High efficiency filter

The unit adopts G3 grade filter, can efficiently filter the dirt etc, and improve the room air quality, at the same time, the filter can pull out from downside, convenient for maintenance and cleaning.

Multi-mode for installation

The indoor unit can be installed with an air return duct or without an air return duct according to the installation need.

PAM control

PAM adjusts the form of the current wave so that it becomes close to that of the supply voltage wave. High harmonice are reduced and 99%of the electricity is utilized.

Auto–restart function (optional)

All indoor units have auto-restart function. When the power supply cut off suddenly, the unit will automatically recover the previous running mode once the power supply is on.

Wider range operation of outside temperature

Group control function (with a group controller YR-E12)

Central control function, if connected with a central controller YCZ-A001

Weekly timing function, if connected with a weekly timer YCS-A001

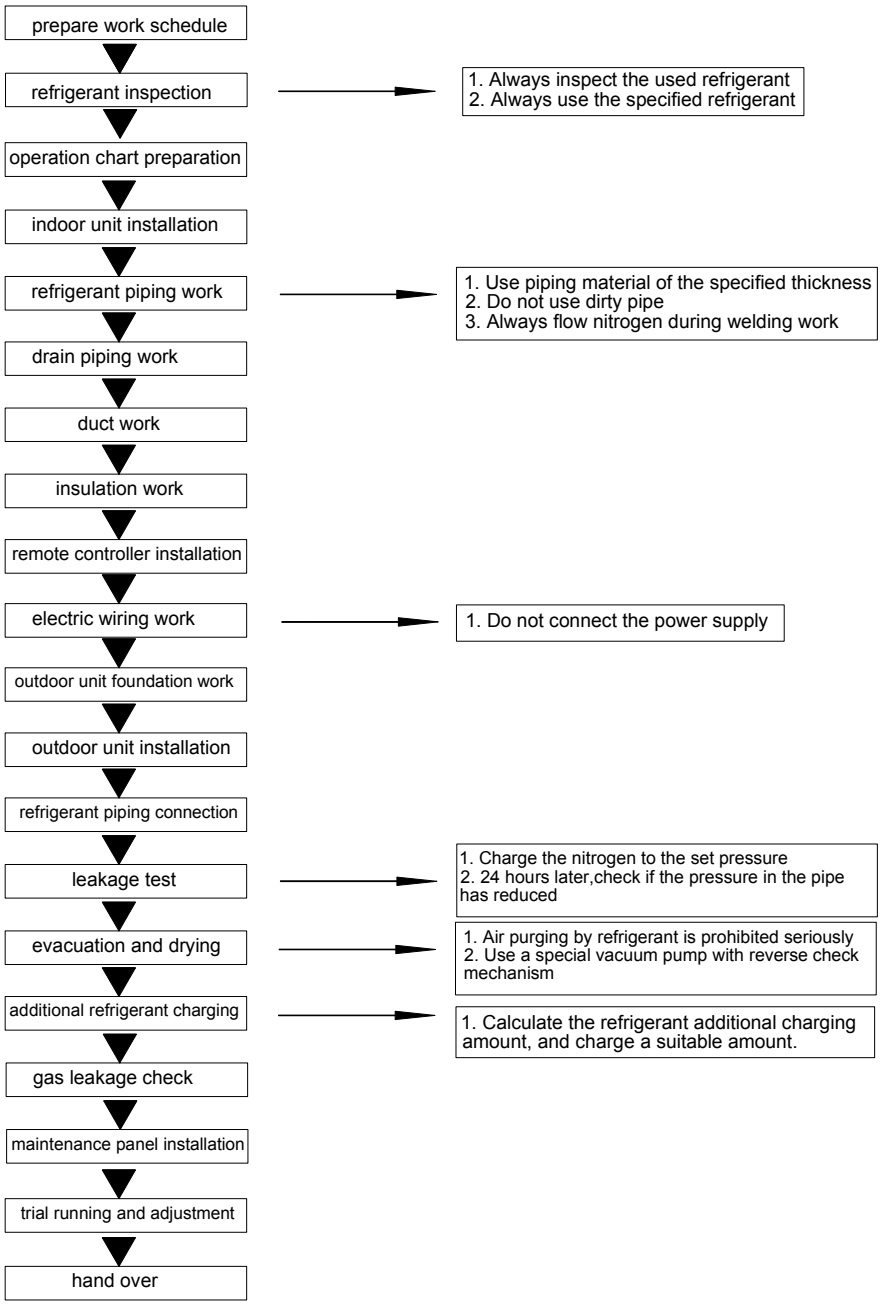
1.5 New friendly refrigerant R410A introduction:

■R410A

The working pressure of R410A is approximately 1.6 times higher than R22. Because the oil in the refrigerant is different, please do not mix them.

Refrigerant	R22 (single)	R410A (mixed)	R407C (mixed)
Oil	Mineral oil (SONTEX 200LT)	Synthetic oil (POE oil)	Synthetic oil (POE oil)
Pressure ratio	1	Approx. 1.6	Approx. 1.1

■Operation flow


prepare work schedule
refrigerant inspection
1. Always inspect the used refrigerant
2. Always use the specified refrigerant
operation chart preparation
indoor unit installation
refrigerant piping work
1. Use piping material of the specified thickness
2. Do not use dirty pipe
3. Always flow nitrogen during welding work
drain piping work
duct work
insulation work
remote controller installation
electric wiring work
1. Do not connect the power supply
outdoor unit foundation work
outdoor unit installation
refrigerant piping connection
leakage test
1. Charge the nitrogen to the set pressure
2. 24 hours later,check if the pressure in the pipe has reduced
evacuation and drying
1. Air purging by refrigerant is prohibited seriously
2. Use a special vacuum pump with reverse check mechanism
additional refrigerant charging
1. Calculate the refrigerant additional charging amount, and charge a suitable amount.
gas leakage check
maintenance panel installation
trial running and adjustment
hand over

■Piping material

1. Use the correct refrigerant piping and materials for R410A
2. For the pipe wall thickness, see the table below:

Pipe diameter	Φ6.35	Φ9.52	Φ12.7	Φ15.88	Φ19.1
Pipe wall thickness	0.8	0.8	0.8	1.0	1.2

Note: Always observe and comply with the local regulations when installing the refrigerant piping.

■Tools

R410A work requires a number of special tools (* symbol). Since the tools used in R22 work cannot be used for R410A, provide the tools separately.

Tool name	Process and application	
Pipe cutter	Piping cutting	Refrigerant piping work
*Flaring tool	Pipe flaring work	
*Torque wrench	Flare nut connection	
Expander	Expansion at pipe connection	
Pipe bender	Pipe bending work	
Nitrogen gas	Pipe oxidation prevention	Air tightness test
Welder	Pipe brazing	
*Gauge manifold	Vacuum evacuation and refrigerant charging operation check	Air tightness test Refrigerant additional charging
*Charging hose		
*Vacuum pump (with adapter)		Vacuum drying
Electronic scale		Refrigerant additional charging
Gas leakage detector	Gas leakage test	

■Work precautions

Refrigerant check: Before work, check the used refrigerant and prepare materials matched to the refrigerant.

Refrigerant piping: Observe the basics of refrigerant piping to avoid the unnecessary problems. In addition, when performing the welding work, seal in the nitrogen gas to the pipes, and prevent it from the oxidation.

Leak pressure detection: Perform seal detection and make sure there is no refrigerant leakage.

Vacuum drying: If the vacuum pump has not the reverse flow check mechanism, use the pump together with a reverse flow check adapter.

Additional refrigerant: Charge a suitable amount of refrigerant with a special R410A gauge manifold and charging hose.

2. SPECIFICATION

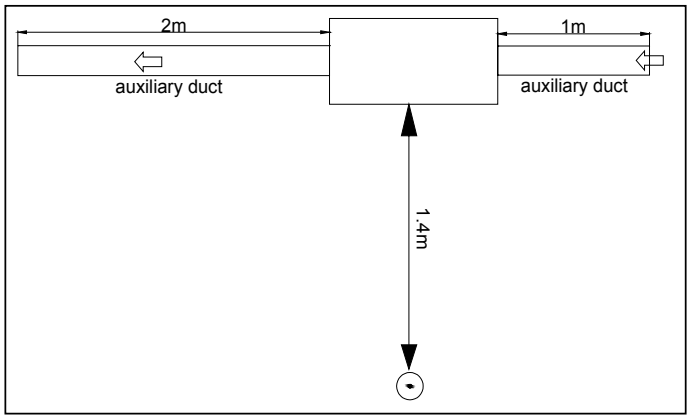
item					Model	AD182ALERA	
Function						cooling	heating
Capacity					kW	4.8(1.8--5.8)	5.5(2.0---6.8)
Total power input					KW	1.65(0.55---2.65)	1.70(0.60---2.65)
Max. power input					W	2650	2650
EER or COP					W/W	2.91(C)	3.24(C)
Dehumidifying capacity					10 - ³×m³/h	1.8	
Running /Max.Running current					A / A	7.5(3.0---12.0)/12A	7.5(3.0---12.0)/12A
Start Current					A	11	
Class of anti electric shock						Class 1	
Max. operating pressure of heat side					Mpa	4.15	
Max. operating pressure of cold side					Mpa	4.15	
Indoor unit	Unit model (color)					AD182ALERA	Grey
	Fan	Type × Number				centrifugal fan X 2	
		Speed(H-M-L)			r/min	700±30 / 540±30 / 400±30	
		Fan motor output power			kW	50	
		Air-flow(H-M-L)			m³/h	780	
	Heat exchanger	Type / Diameter			mm	TP2M/7X0.5	
		Total Area			m²	0.34	
		Temp. scope			℃	2-7	
	Dimension	External	（L×W×H）		mm×mm×mm	1090×500×220	
		Package	（L×W×H）		mm×mm×mm	1174×549×294	
	Drainage pipe (material , I.D./O.D.)				mm	PVC 16/12	
	Control type (Remote /wired /model)					wired control	
	Noise level (H-M-L)				dB(A)	45/41/37	
	Weight (Net / Shipping)				kg / kg	23/26.5	

item					Model	AD362AHERA	
Function						cooling	heating
Capacity					BTU/h	32400	38900
Capacity					kW	9.5(2.2~10.5)	11.4(2.5~12.0)
Sensible heat ratio						0.73	
Total power input					kW	3.38(0.50---3.9)	3.15(0.50--3.9)
Max. power input					W	4300	4300
EER or COP					W/W	2.81	3.62
Energy efficiency stage						C	A
Dehumidifying capacity					10 - ³×m³/h	3.5	
Running /Max.Running current					A / A	15.3（2.3-17.5）	15.0（2.3-17.5）
Indoor unit	Unit model (color)					AD362AHERA(grey)	
	Fan	Type × Number				centrifugal X2	
		Speed(H-M-L)			r/min	1090+30/-/930+50	
		Fan motor output power			kW	0.4	
		Air-flow(H-M-L)			m³/h	2400/2070/1760	
	Heat exchanger	Type / Diameter			mm	inner groove pipe /φ7	
		Total Area			m²	0.479	
		Temp. scope			℃	2-7	
	Dimension	External	（L×W×H）		mm×mm×mm	1197×830×350	
		Package	（L×W×H）		mm×mm×mm	1430×940×420	
	Drainage pipe (material , I.D./O.D.)				mm	PVC 26/32	
	Control type (Remote /wired)					wired	
	Outlet distribution hole dimension				mm	853×254	
	Electricity Heater				kW	0	
	Noise level (H-M-L)				dB(A)	50/46/42	
	Weight (Net / Shipping)				kg / kg	62/70	

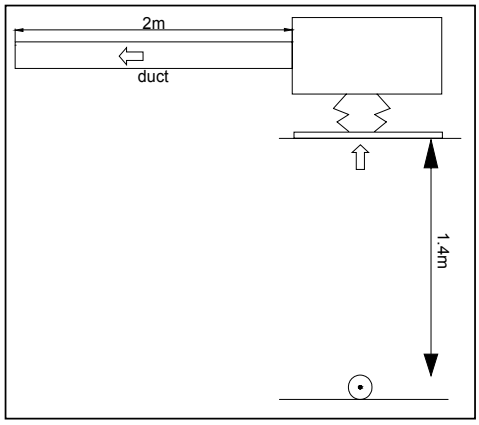
Norminal condition: indoor temperature (cooling): 27℃DB/19℃WB, indoor temperature (heating): 20℃DB
Outdoor temperature(cooling): 35℃DB/24℃WB, outdoor temperature(heating): 7℃DB/6℃WB
The noise level will be measured in the third octave band limited values, using a Real Time Analyser calibrated sound intensity meter. It is a sound pressure noise level.

Installation state: the unit should be placed on the flat floor or be mounted in horizontal direction.
Testing method:

duct unit with auxiliary duct:



duct unit without auxiliary duct:



Note: ⊙ is the real time analyser position

3. Safety precaution

Carefully read the following information in order to operate the airconditioner correctly.

Below are listed three kinds of Safety Cautions and Suggestions.

WARNING! Incorrect operations may result in severe consequences of death or serious injuries.

CAUTION! Incorrect operations may result in injuries or machine damages; in some cases may cause serious consequences.

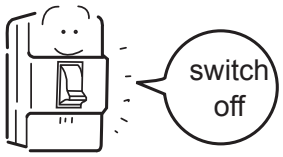
INSTRUCTIONS: These information can ensure the correct operation of the machine.

Be sure to conform with the following important Safety Cautions.
The Safety Cautions should be at hand so that they can be checked at any time when needed.
If the conditioner is transferred to the new user, this manual should be as well transferred to the new user.

WARNING!

- If any abnormal phenomena is found (e. g.smell of firing), please cut off the power supply immediately, and contact the dealer to find out the handling method.

  In such case, to continue using the conditioner will damage the conditioner, and may cause electrical shock or fire hazard.



- After the unit being used for a long time, the base should be checked for any damages.

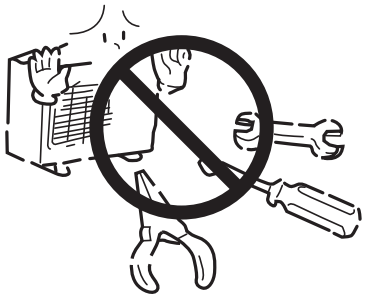
  If the damaged base is not repaired, the unit may fall down and cause accidents.

- Don't dismantle the outlet of the outdoor unit.

  The exposed fan is very dangerous which may harm human beings.

- When the unit needs maintenance and repairment, please call dealer to handle it.

  Incorrect maintenance and repairment may cause water leak, electrical shock and fire hazard.



WARNING!

- Installed electrical-leaking circuit breaker.

  It easily cause electrical shock without circuit breaker.

- Air-conditioner can't be installed in the environment with inflammable gases because the inflammable gases near to air-conditioner may cause fire hazard.

- Please let the dealer be responsible for installing the conditioner.

  Incorrect installation may cause water leak, electrical shock and fire hazard.

- Call the dealer to take measures to prevent the refrigerant from leaking.

  If conditioner is installed in a small room be sure to take every measure in order to prevent suffocation accident even in case of refrigerant leakage.

- When conditioner is removed or reinstalled, dealer should be responsible for them.

  Incorrect installation may cause water leaking, electrical shock and fire hazard.

- Connect earthing wire.

  Earthing wire should not be connected to the gas pipe, water pipe, lightning rod or phone line, in-correct earthing may cause shock.

Earthing

- Nothing or nobody is permitted to placed on or stand on outdoor unit.

  The falling of goods and people may cause accidents.

- Don't operate the air-conditioner with damp hands.

  Otherwise will be shocked.

- Only use correctly-typed fuse.

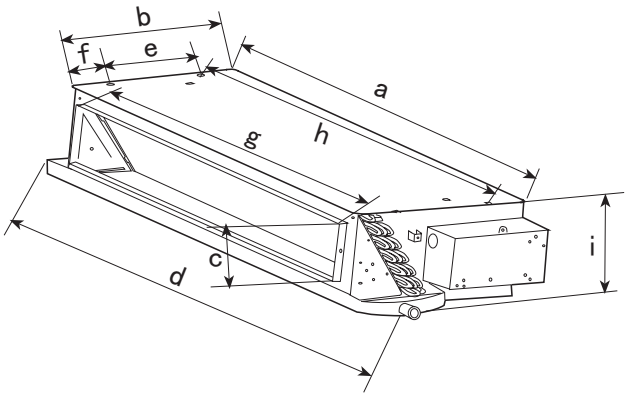
  May not use wire or any other materials replacing fuse, other-wise may cause faults or fire accidents.

- Use discharge pipe correctly to ensure efficient discharge.

  Incorrect pipe use may cause water leaking.

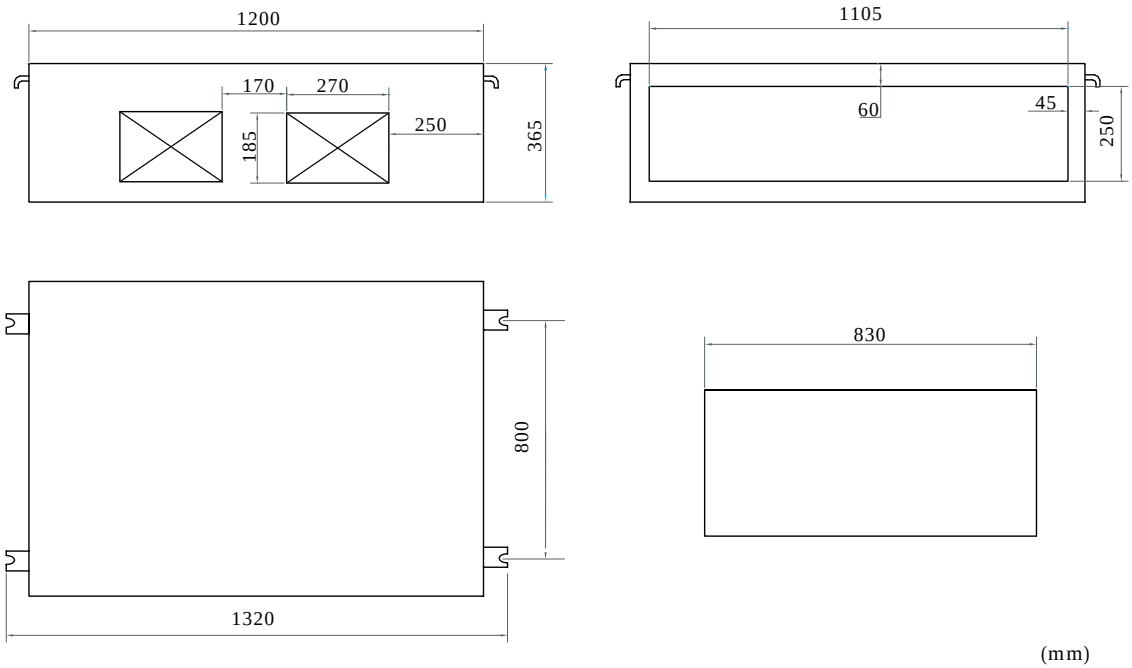
4. Net dimension

AD182ALERA



a	b	c	d	e	f	g	h	i
1002	483. 5	131	1105	255	105	880	970	220

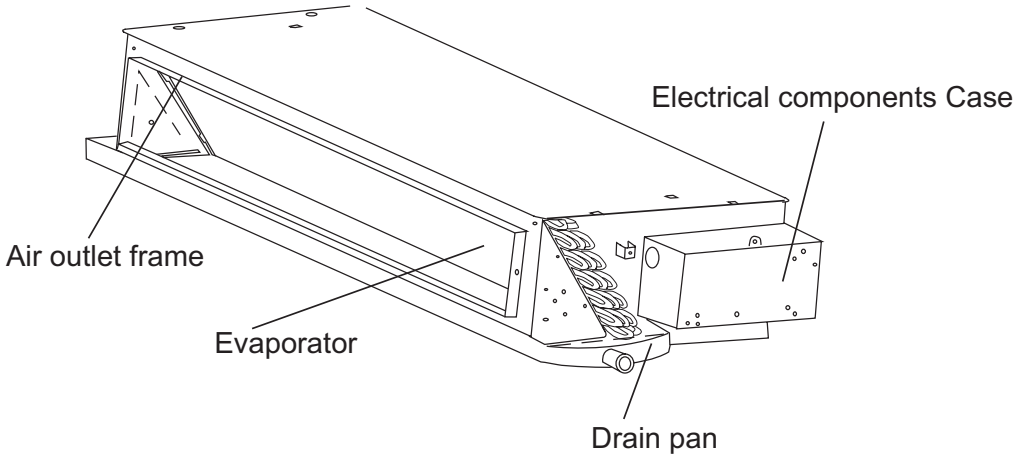
AD362AHERA



(mm)

5. Parts and Functions

AD182ALERA



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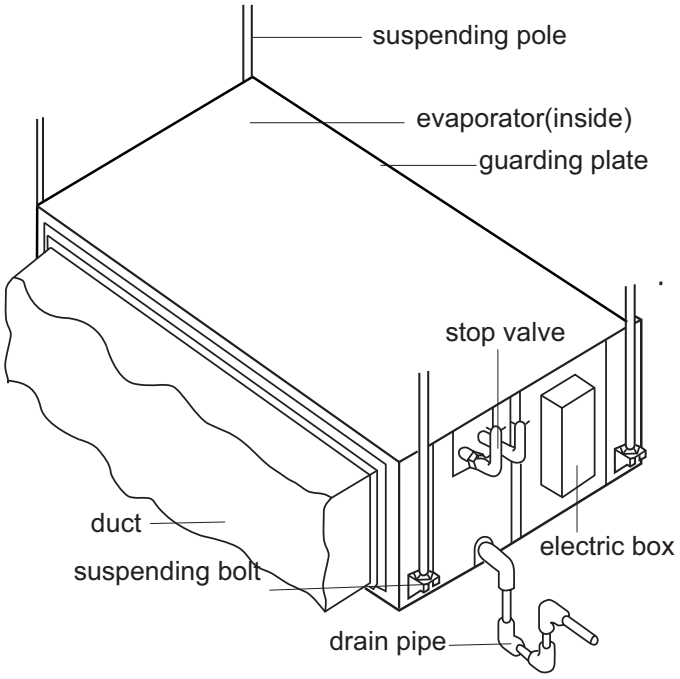


6. Installation Instructions

6.1 Installation for AD182ALERA

Installation space

The indoor unit shall be installed at locations where cold and hot air could evenly circulated.
The following locations should be avoided:

Places with rich salt (seaside area).
Places with plenty of gas sulfides (mainly in warm spring areas where the copper tube and braze weld is easy to corrosion).
Locations with much oil (including mechanical oil) and steam.
Locations using organic solvents.
Places where there are machines generating HF electromagnetic waves.
Positions adjacent to door or window in contact with high-humidity external air. (Easy to generate dew).
Locations frequently using special aerosols.

The following points should be taken care of:

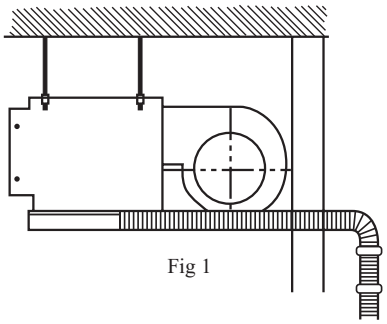


Fig 1

1. Select suitable places the outlet air can be sent to the entire room, and convenient to lay out the connection pipe, connection wire and the drainage pipe to outdoor.
2. The ceiling structure must be strong enough to support the unit weight.
3. The connecting pipe, drain pipe and connection wire shall be able to go though the building wall to connect between the indoor and outdoor units.
4. The connecting pipe between the indoor and outdoor units as well as the drain pipe shall be as short as possible. (See Figure 1)
5. If its necessary to adjust the filling amount of the refrigerant, please refer to the installation manual attached with the outdoor unit.
6. The connecting flange should be provided by the user himself.
7. The indoor unit has two water outlets one of which is obstructed at the factory (with a rubber cap). Only the outlet not obstructed (liquid inlet and outlet side) will be generally used during installation. If applicable, both the outlets should be used together.

Note: The access hole must be provided during installation of indoor unit for maintenance.

After selecting the installation space, proceed the following steps:

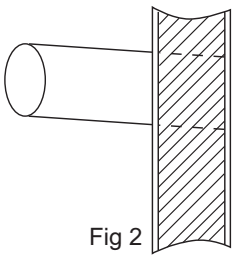
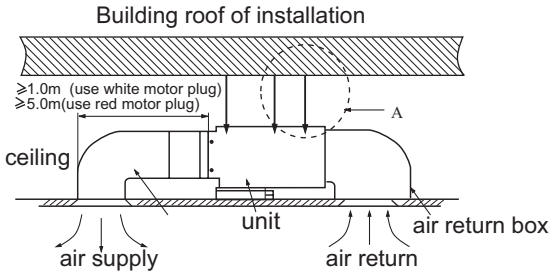
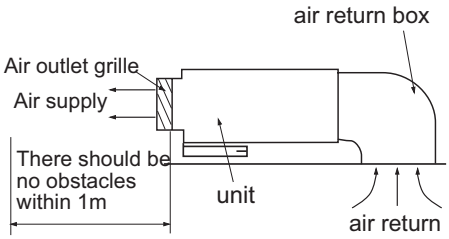


Fig 2

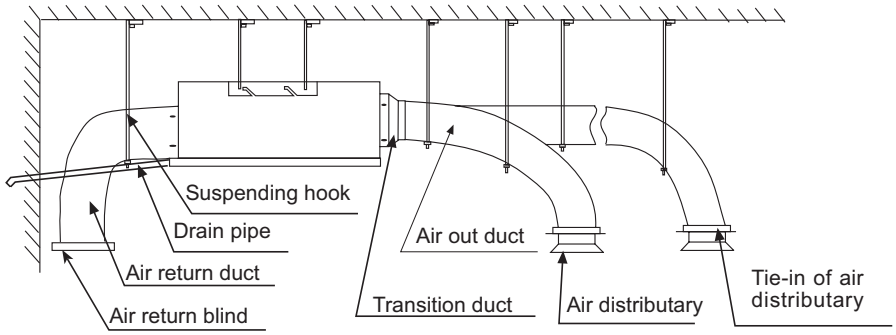
1. Drill a hole in the wall and insert the connecting pipe and wire through a PVC wall-through tube purchased locally. The wall hole shall be with a outward down slope of at least 1/100. (See Figure 2)
2. Before drilling check that there is no pipe or reinforcing bar just behind the drilling position. Drilling shall avoid at positions with electric wire or pipe.
3. Mount the unit on a strong and horizontal building roof. If the base is not firm, it will cause noise, vibration or leakage.
4. Support the unit firmly.
5. Change the form of the connection pipe, connection wire and drain pipe so that they can go through the wall hole easily.

- Each of the air sending duct and air return duct shall be fixed on the prefabricated panel of the floor by the iron bracket.
- The recommended distance between the edge of the air return duct and the wall is over 150mm.
- The gradient of the condensate water pipe shall keep over 1%.
- The condensate water pipe shall be thermal insulated.
- When installing the ceiling Concealed type indoor unit, the air return duct must be designed and installed (as figure shown).



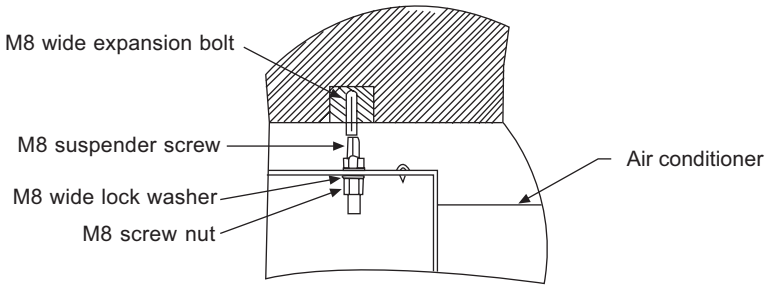


Note: When connecting the short ducts, use the low static terminals, which color is white.
The distance L from the air outlet of the duct to the air outlet of the sir conditioner shall be no more than 1 m.



The sketch map of long duct

Note: When connecting the long ducts, use the middle static terminals, which color is red.
The distance L from the air outlet of the duct to the air outlet of the sir conditioner shal be no more than 5 m.



Installation of indoor unit duct

1. Installation of air sending duct

- This unit uses rounded duct, the diameter of the duct is 180mm.
- The round duct needs to add a transition duct to connect with the air-sending duct of indoor unit,then connect with respective separator. As Fig. 1 shown, all the fan speed of any of the separator's air outlet shall be adjusted approximately the same to meet the requirement for the room air conditioner.

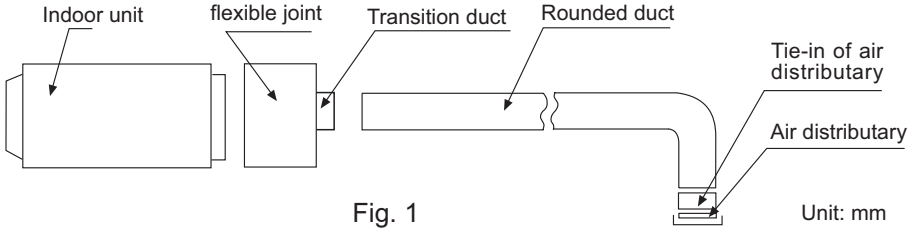


Fig. 1

2. Installation of air return duct

- Use rivet to connect the air return duct on the air return inlet of the indoor unit, then connect the other end with the air return blind. As Fig. 2 shown.

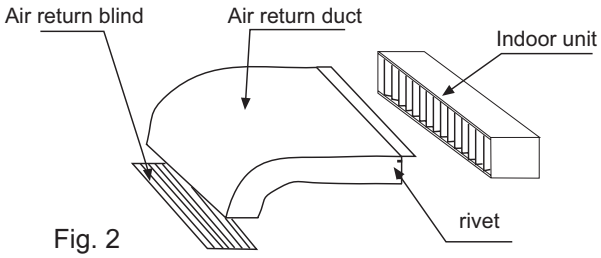


Fig. 2

3 Thermal insulation of duct

- Air-sending duct and air return duct shall be thermally insulated. First stick the gluey nail on the duct, then attach the heat preservation cotton with a layer of tinfoil paper and use the gluey nail cap to fix. Finally use the tinfoil adhesive tape to seal the connected part. As Fig. 3 shown.

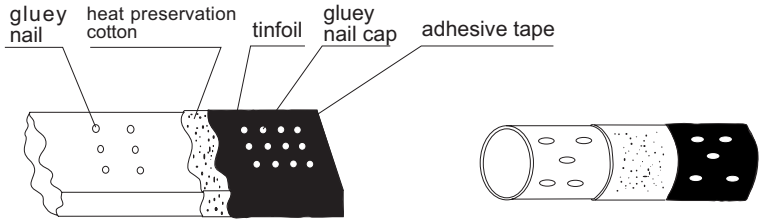


Fig. 3

Installing the suspension screw:

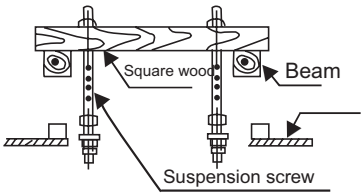
Use M8 or M10 suspension screws (4,prepared in the field)(when the suspension screwheight exceeds 0.9m, M10 size is the only choice).These screws shall be installed as follows with space adapting to air conditioner overall dimensions according to the original building structures.

Wooden structure

A square wood shall be supported by the beams and then set the suspension screws.

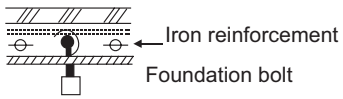
New concrete slab

To set with embedded parts,foundation bolts etc.



Knife embedded part

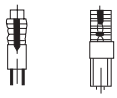
Guide plate embedded part



Pipe suspension foundation bolt

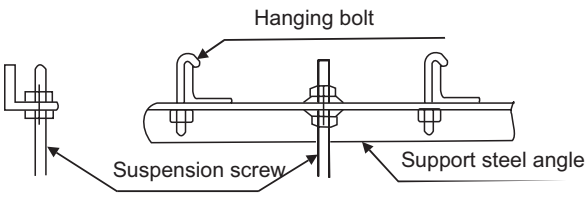
Original concrete slad

Use hole hinge,hole plunger or hole bolt.



Steel reinforcement structure

Use steel angle or new support steel angle directly.



Hanging of the indoor unit

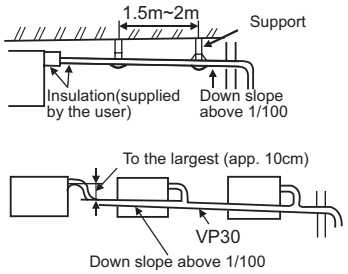
Fasten the nut on the suspension screw and then hang the suspension screw in the T slot of the suspension part of the unit. Aided with a level meter,adjust level of the unit within 5mm.

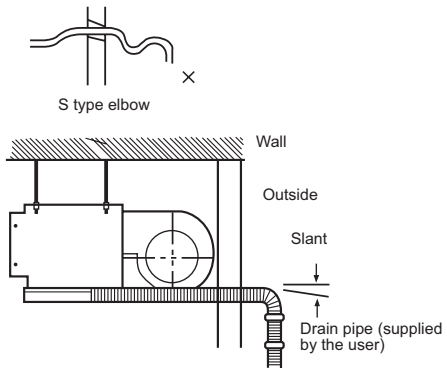
⚠ Caution

In order to drain water normally, the drain pipe shall be processed as specified in the installation manual and shall be heat insulated to avoid dew generation. Improper hose connection may cause indoor water leakage.

Requirements

- The indoor drain pipe shall be thermal insulated.
- The connection part between the drain pipe and the indoor unit shall be insulated so as to prevent dew generation.
- The drain pipe shall be slant downwards (greater than 1/100). The middle part shall not be of S type elbow, otherwise abnormal sound will be produced.
- The horizontal length of the drain pipe shall be less than 20 m. In case of long pipe, supports shall be provided every 1.5 – 2m to prevent wavy form.
- Central piping shall be laid out according to the following figure.
- Take care not to apply external force onto the drain pipe connection part.





Pipe and insulation material

Pipe	Rigid PVC pipe VP20 mm (internal diameter)
Insulation	Foamed PE with thickness above 7 mm

Hose

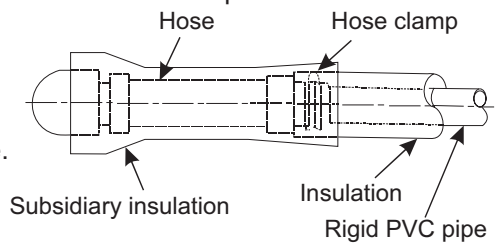
Drain pipe size: (3/4") PVC pipe

The hose is used for adjusting the off-center and angle of the rigid PVC pipe.

- Directly stretch the hose to install without making any deformation.
- The soft end of the hose must be fastened with a hose clamp.
- Please apply the hose on horizontal part

Insulation treatment:

- Wrap the hose and its clamp until to the indoor unit without any clearance with insulating material, as shown in the figure.



Drain confirmation

During trial run, check that there is no leakage at the pipe connection part during water draining even in winter.

⚠ Caution

- In installation, if there is refrigerant gas leakage, please take ventilation measures immediately. The refrigerant gas will generate poisonous gas upon contacting fire.
- After installation, please verify that there is no refrigerant leakage. The leaked refrigerant gas will produce poisonous gas when meeting fire source such as heater and furnace etc.

Allowable pipe length and drop

These parameters differ according to the outdoor unit. See the instruction manual attached with the outdoor unit for details.

Pipe material and size

Type	Pipe material	Phosphorus deoxidized copper seamless pipe (TP2M) for air conditioner	
For series 182	Pipe size (mm)	Gas side	Ø12.70
		Liquid side	Ø6.35

Supplementary refrigerant

The refrigerant supplementation shall be as specified in the installation instructions attached with the outdoor unit.
The adding procedure shall be aided with a measuring meter for a specified amount of supplemented refrigerant.

Requirement

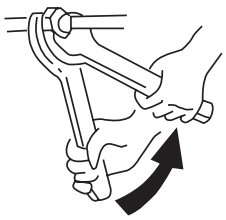
- Overfilling or underfilling of refrigerant will cause compressor fault. The amount of the added refrigerant shall be as specified in the instructions.

Connection of refrigerant pipe

Conduct flared connection work to connect all refrigerant pipes.

- The connection of indoor unit pipes must use double spanners.
- The installing torque shall be as given in the following table.
- Wall thicknessof connection pipe ⩾ 0.8mm

Connecting pipe O.D.(mm)	Installing torque(N-m)
Ø6.35	11.8 (1.2kgf-m)
Ø9.52	24.5 (2.5 kgf-m)
Ø12.70	49.0 (5.0 kgf-m)
Ø15.88	78.4 (8.0 kgf-m)



Double-spanner operation

Vacuum pumping

With a vacuum pump,create vacuum from the stop valve of the outdoor unit.
Emptying with refrigerant sealed in the outdoor unit is absolutely forbidden.

Open all valves

Open all the valves on the outdoor unit.

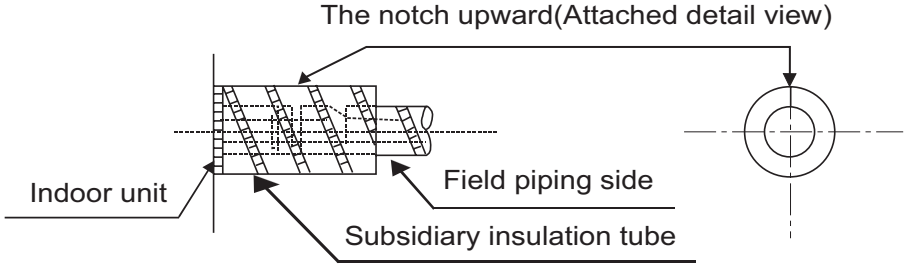
Gas leakage detection

Check with a leakage detector or soap water that if there is gas leakage at the pipe connections and bonnets.

Insulation treatment

Conduct insulation treatment on both the gas side and liquid side of pipes respectively.
During cooling operation,both the liquid and gas sides are cold and thus shall be insulated so as to avoid dew generation.

- The insulating material at gas side shall be resistant to a temperature above 120 °C
- The indoor unit pipe connection part shall be insulated.



Electric wiring

⚠ WARNING

DANGER OF BODILY INJURY OR DEATH

TURN OFF ELECTRIC POWER AT CIRCUIT BREAKER OR POWER SOURCE BEFORE MAKING ANY ELECTRIC CONNECTIONS. GROUND CONNECTIONS MUST BE COMPLETED BEFORE MAKING LINE VOLTAGE CONNECTIONS.

(1) Selection of size of power supply and interconnecting wires.

Precautions for Electric wiring

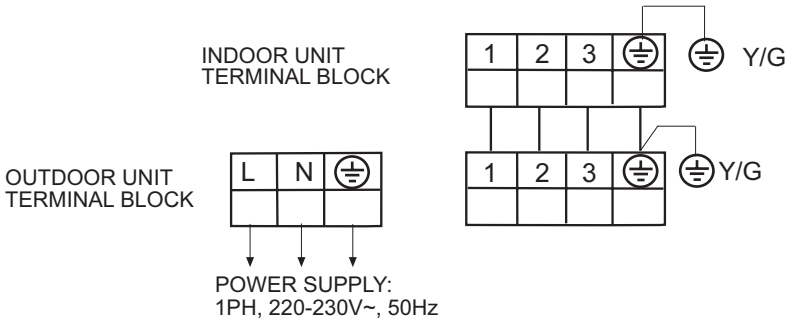
- Electric wiring work should be conducted only by authorized personnel.
- Do not connect more than three wires to the terminal block. Always use round type crimped terminal lugs with insulated grip on the ends of the wires.
- Use copper conductor only.

Select wire sizes and circuit protection from table below. (This table shows 20 m length wires with less than 2% voltage

Item	Phase	Circuit breaker		Power source wire size	Earth leakage breaker	
		Switch breaker (A)	Overcurrent protector		Switch break	Leak curren
For series 182	1	40	26	2.5mm^2	40A	30mA

(2) Wiring connection

Make wiring to supply power to the outdoor unit, so that the power for the indoor unit is supplied by terminals.



6.2 Installation for AD362AHERA

1. Before installation [Before finishing installation, do not throw the attached parts installation needs]

- Confirm the way to move the unit to the installation place.
- Before moving the unit to the installation place, do not remove their packages.
  When have to remove the package, use a soft material or protection board with rope to lift the unit assembly to avoid unit damage or bumping a scrape.

2. Choose installation place

(1) The chosen installation place should meet the following requirements and get the user□s consent.

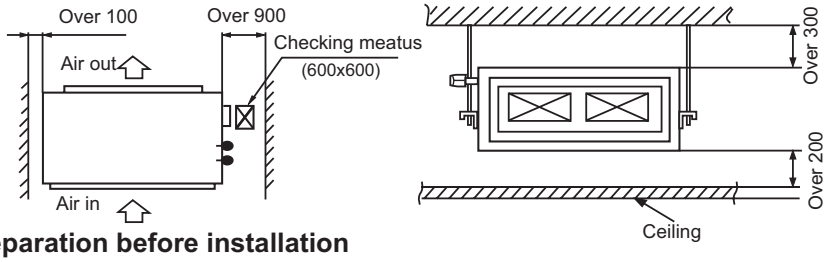
- Place ensures ideal airflow distribution.
- The passage of airflow has no obstacles.
- When importing outside air, it should be imported directly from outdoors. (if the pipe can not be extended, it also can not be imported from top)
- Place ensures enough space for maintenance.
- The pipe length between indoor and outdoor unit is in the permitted limit (referring to outdoor unit installation part).
- The indoor unit, outdoor unit, electric wire and connection wire is at least 1m away from television and radio. This is to avoid the image disturbance and noise caused by the above-mentioned home appliance. (Even if 1m away, if the electromagnetic wave is too strong, it can also cause noise.)

(2) The height of ceiling

- The indoor unit can install on the ceiling, which height is no more than 3m.

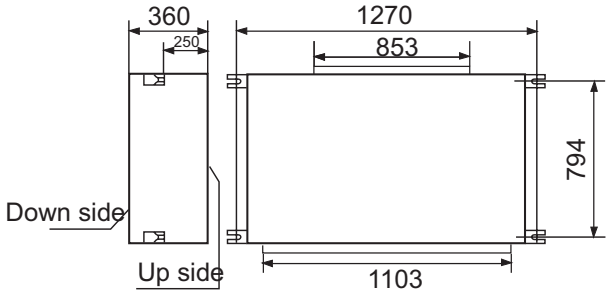
(3) Install and use the hoisting screw. Check if the installation place can bear the weight of unit assembly.

- If not certain, strengthen it before install the unit.



3. Preparation before installation

(1) The position relation among hoisting screw (unit: mm)



(2) If necessary, cut the opening installation and checking needed on the ceiling. (If has ceiling)

- Before installation, finish the preparation work of all the pipes (refrigerant, drainage) and wire (wire controller connection wire, indoor and outdoor unit connection wire) of indoor unit, so that after installation, they can be immediately connected with outdoor unit.
- Cut the opening on the ceiling. Maybe it needs to strengthen the ceiling to keep the ceiling even and flat and prevent the ceiling from vibration. For details, please consult to the builder.

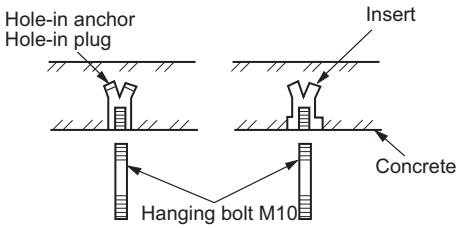
(3) Hanger bolts installation

- Use care of the piping direction when the unit is installed.

(Use M10 screw bolt)

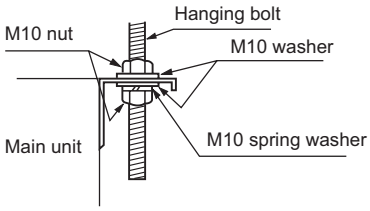
In order to bear the weight of the unit, for existed ceiling, using foundation screw bolt, for new ceiling, using burying embedded screw bolt, burying screw bolt or spot supplied other parts.

Before going on installation, adjust the gaps with ceiling.



4. Installation of indoor unit

- Fix the indoor unit to the hanger bolts.
  If required, it is possible to suspend the unit to the beam, etc.
  Directly by use of the bolts without using the hanger bolts.



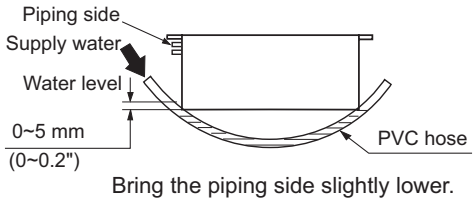
Note

When the dimensions of main unit and ceiling holes does not match, it can be adjusted with the slot holes of hanging bracket.

Adjusting to the levelness

(a) Adjust the out-of levelness using a level or by the following method.

- Make adjustment so that the relation between the lower surface of the unit proper and water level in the hose becomes as given below.



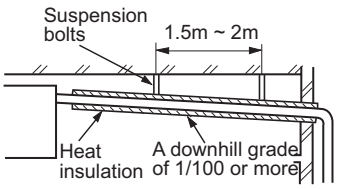
Bring the piping side slightly lower.

(b) Unless the adjustment to the levelness is made properly, malfunctioning or failure of the float switch may occur.

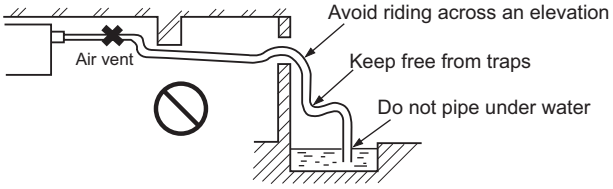
5. Drain Piping

(a) Drain piping should always be in a downhill grade (1/50~1/100) and avoid riding across an elevation or making traps.

• Good piping

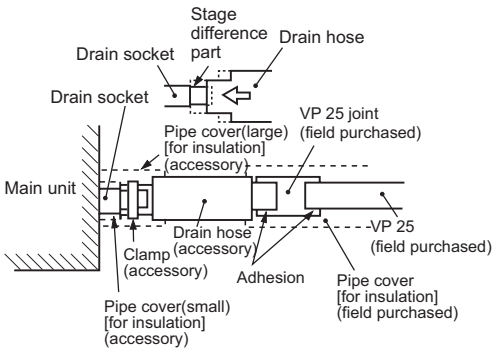


• Improper piping

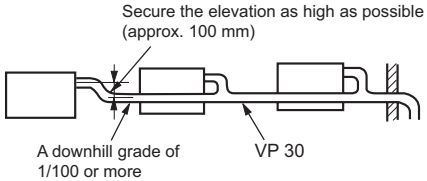


(b) When connecting the drain pipe to unit, pay suffcient attention not to apply excess force to the piping on the unit side. Also, fix the piping at a point as close as possible to the unit.

(c) For drain pipe, use hard PVC general purpose pipe VP-25(I.D.1") which can be purchased locally. When connecting, insert a PVC pipe end securely into the drain socket before tightening securely using the attached drain hose and clamp. Adhesive must not be used connection of the drain socket and drain hose (accessory).



(d) When constructing drain piping for several units, position the common pipe about 100 mm below the drain outlet of each unit as shown in the sketch. Use VP-30(11/4") or thicker pipe for this purpose.



(e) The stiff PVC pipe put indoor side should be heat insulated.

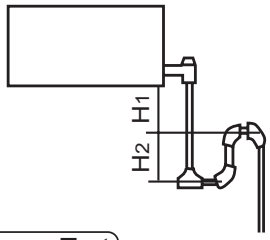
(f) Avoid putting the outlet of drain hose in the places with irritant gas generated. Do not insert the drain hose directly into drainage, where the gas with sulfur may be generated.

(g) Backwater bend

Because the drain spout is at the position, which negative pressure may occur. So with the rise of water level in the drain pan, water leakage may occur. In order to prevent water leakage, we designed a backwater bend.

The structure of backwater bend should be able to be cleaned. As the below figure shown, use T type joint. The backwater bend is set near the air conditioner.

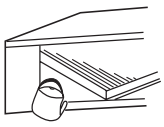
- As figure shown, set a backwater bend in the middle of drain hose.



H1=100mm or the static pressure of air sending motor
H2=1/2H1 (or between 50~100mm)

Drainage Test

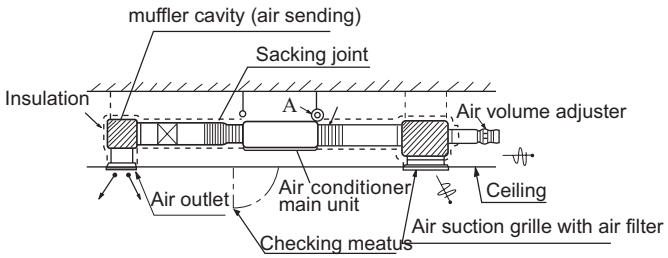
① Conduct a drainage test after completion of the electrical work.
② During the trial, make sure that drain flows properly through the piping and that no water leaks from connections.
③ In case of a new building, conduct the test before it is furnished with the ceiling.
④ Be sure to conduct this test even when the unit is installed in the heating season.

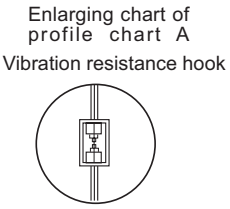


Procedures

① Supply about 1000 cc of water to the unit through the air outlet using a feed water pump.
② Check the drain while cooling operation.

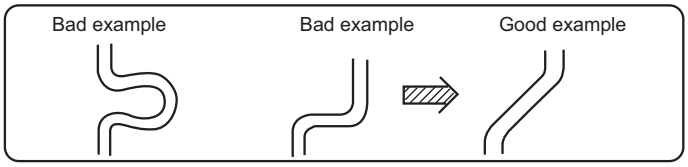
6. Installation of air suction and discharging duct





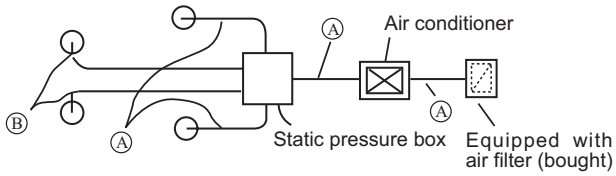
Please consult the after-sales service worker of Haier Air Conditioner for the choosing and installation of suction inlet, suction duct, discharging outlet and discharging duct. Calculating the design drawing and outer static pressure, and choose the discharging duct with proper length and shape.

- The length difference among every duct is limited below 2:1.
- Reduce the length of duct as possible as can.
- Reduce the amount of bend as possible as can.
- Use heat insulation material to bind and seal the part connecting main unit and the flare part of air discharging duct. Perform duct installation work, before the ceiling fit.



7. Calculation method of the dimension of the simple quadrate air duct

Presuming the unit length friction impedance of the duct is 1Pa/m, when the dimension of one side of the air duct is fixed as 250mm, as shown below:



	AD362AHERA	
	Air volume	Duct (mmxmm)
Ⓐ	2400m³/h (40m³/min)	250x310
Ⓑ	600m³/h (10m³/min)	250x120

- **The calculation of duct resistance (the simple calculation is as follow table)**

Straight part	Calculate as per 1m length 1Pa, 1Pa/m
Bend part	Each bend takes as a3~4m long straight duct
Air out part	Calculate as 25Pa
Static pressure box	Calculate as 50Pa/each
Air inlet grille (with air filter)	Calculate as 40Pa/each

- **The chosen chart of simple duct**

Note:1Pa/m=0.1mmAg/m

Shape / Item / Air volume	Square duct
	Dimension
$m^3/h(m^3/n)$	(mmxmm)
100	250 x 60
200	250 x 90
300	250 x 120
400	250 x 140
500	250 x 170
600(10)	250 x 190
800	250 x 230
1,000	250 x 270
1,200(20)	250 x 310
1,400	250 x 350
1,600	250 x 390

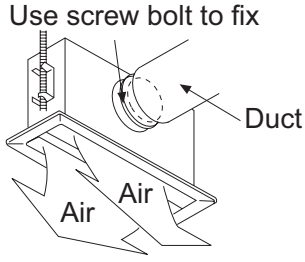
Shape / Item / Air volume	Square duct
	Dimension
$m^3/h(m^3/n)$	(mmxmm)
1,800(30)	250 x 430
2000	250 x 470
2400	250 x 560
3,000(50)	250 x 650
3,500	250 x 740
4,000	250 x 830
4,500	250 x 920
5,000	250 x 1000
5,500	250 x 1090
6,000(100)	250 x 1180

8. The attentive matters in installation of air suction and discharging duct

- Recommend to use anti-frost and sound-absorbing duct. (locally bought)
- The duct installation work should be finished before the fitment of ceiling.
- The duct must be heat insulated.
- The specific air-discharging outlet should be installed at the place where the airflow can be reasonably distributed.
- The surface should leave a checking meatus for checking and maintenance.

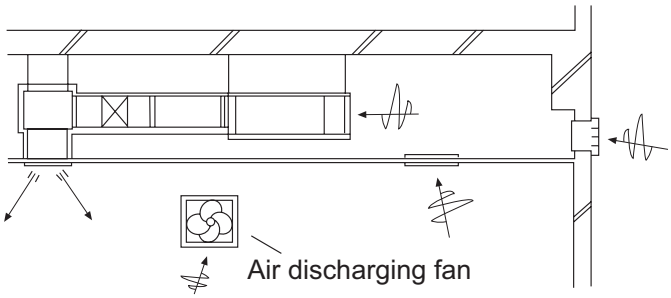
Special air discharging outlet

Use screw bolt to fix



9. The examples of improper installation

- Do not use air in duct and take the ceiling inner side instead. The result is because of the irregular outer air mass, strong wind and sunshine, the humidity is increased.
- There may be water drop on the outside of duct. For cement and other new constructions, even if not taking ceiling inner side as duct, the humidity will also be so high. At this time, use glass fiber to perform heat preservation to the whole. (use iron net to bind the glass fiber)
- Maybe exceeding the unit operation limit (for example: when indoor dry bulb temperature is 35degree, web bulb temperature is 24degree), it may lead to overload of compressor.
- Affected by the capacity of air discharging fan, the strong wind in the outer duct and wind direction, when unit air sending volume exceeds the limit, the discharged water of heat exchanger will overflow, leading to water leakage.



Improper example

10. The operation method of fan controller

Through the fan controller switch in the electric box, the air volume of this unit can be continuously adjusted.

It is unnecessary to adjust air volume through the duct side wind level (unit outside static adjustment).

The air volume set should be in the operation air volume range.

Figure I shows the position of fan controller in the electric box and operation method.

After finishing the electric work, perform test run. According to the main points in Figure II making the chosen switch No. accordant. And confirm if it reaches the needed air volume.

Note:

1) When operating the fan controller, it is possible to touch the electric charging part, so do cut off the power supply.

2) Do not set the dial at the position less than 1.

3) The figure circled in Figure II indicate the capacity number of fan controller. The non-listed capacity number may exceed the permitted operation capacity range, so it is impossible to operate.

4) When delivering from factory, the capacity number of fan controller is set at □No.5□.

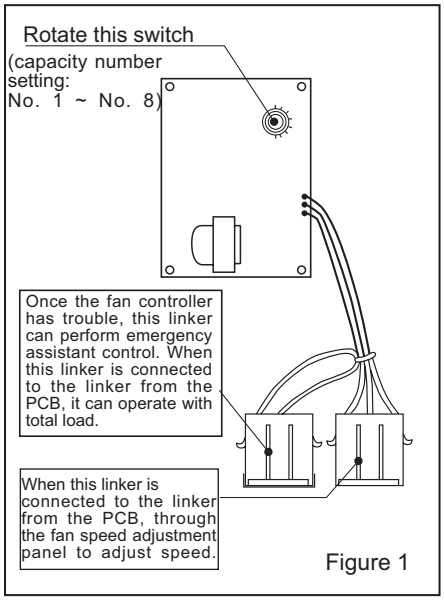

Rotate this switch
(capacity number setting:
No. 1 ~ No. 8)
Once the fan controller has trouble, this linker can perform emergency assistant control. When this linker is connected to the linker from the PCB, it can operate with total load.
When this linker is connected to the linker from the PCB, through the fan speed adjustment panel to adjust speed.

Figure 1

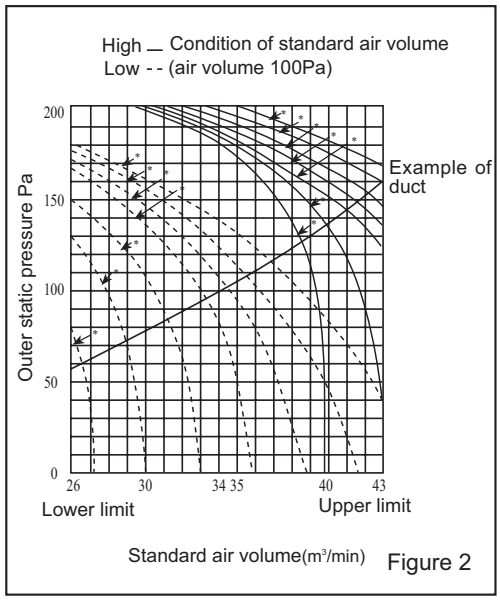


Figure 2

● The example of the method of choosing capacity number:

1) If the unit is in high-speed operation, needing take outer static pressure is 180Pa in capacity air volume 34m^3/min as working condition point, according to Figure II □The characteristic chart of air volume□, the capacity number of fan controller is No. 2.

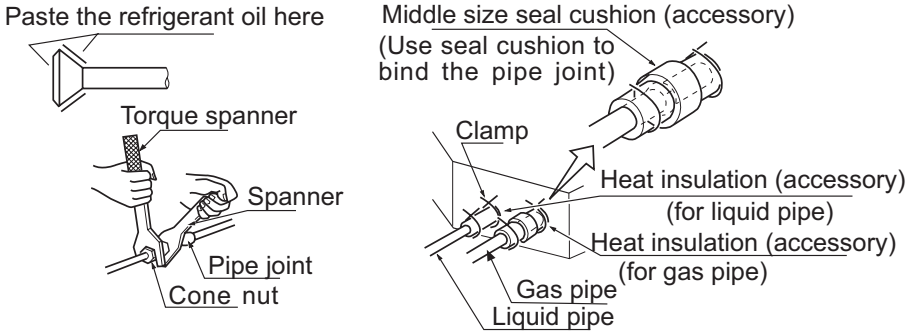
2) If the unit is in low speed operation, needing take outer static pressure is 60Pa in capacity air volume 32m^3/min as working condition point, according to Figure II □The characteristic chart of air volume□, the capacity number of fan controller is No. 4.

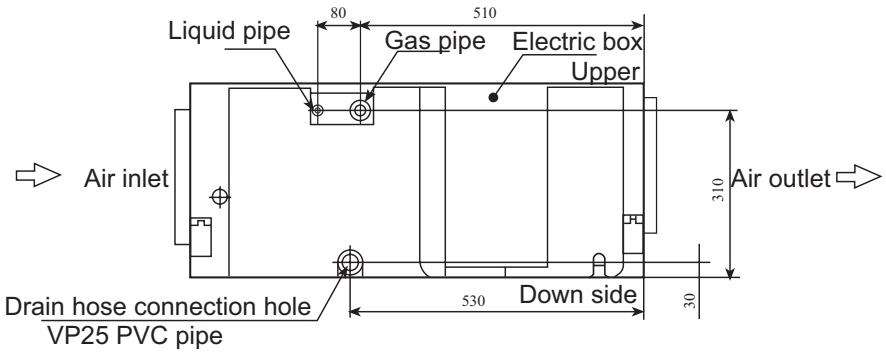
11. Refrigerant pipe

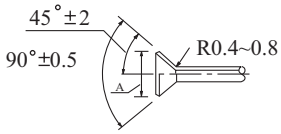
[The air side pipe, liquid side pipe must be faithfully heat insulated, if no heat insulation, it may cause water leakage.]

● The outdoor unit has been charged with refrigerant.

- When connect the pipe to the unit or dismantling the pipe from the unit, please follow the figure shown, use spanner and torque spanner together.
- When connect cone nut, the inner side and outside of cone nut should paste with refrigerant oil. Use hand to twist 3-4 rings, then fasten with spanner.
- Referring to Table I to confirm the fasten torque. (too tight may damage nut leading to leakage)
- Check if the connection pipe leaks, then do heat insulation treatment, as below figure shown.
- Only use seal cushion to bind the joint part of air pipe and heat insulation parts.





Specification of pipe (mm)	Tighten torque	Cone dimension A (mm)	Cone
Φ 9.52	3270~3990 N·cm (333~407 kgf·cm)	12.0~12.4	
Φ 15.88	6180~7540 N·cm (630~770 kgf·cm)	18.6~19.0	
Φ 19.05	9720~11860 N·cm (990~1210 kgf·cm)	22.9~23.3	

5. Electric wiring

⚠WARNING

DANGER OF BODILY INJURY OR DEATH

TURN OFF ELECTRIC POWER AT CIRCUIT BREAKER OR POWER SOURCE BEFORE MAKING ANY ELECTRIC CONNECTIONS. GROUND CONNECTIONS MUST BE COMPLETED BEFORE MAKING LINE VOLTAGE CONNECTIONS.

(1) Selection of size of power supply and interconnecting wires.

Precautions for Electric wiring

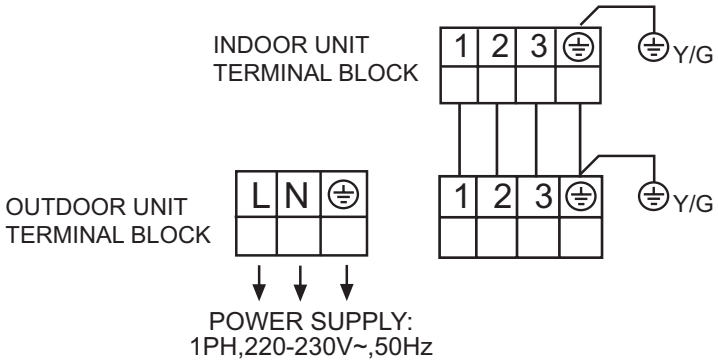
- Electric wiring work should be conducted only by authorized personnel.
- Do not connect more than three wires to the terminal block. Always use round type crimped terminal lugs with insulated grip on the ends of the wires.
- Use copper conductor only.

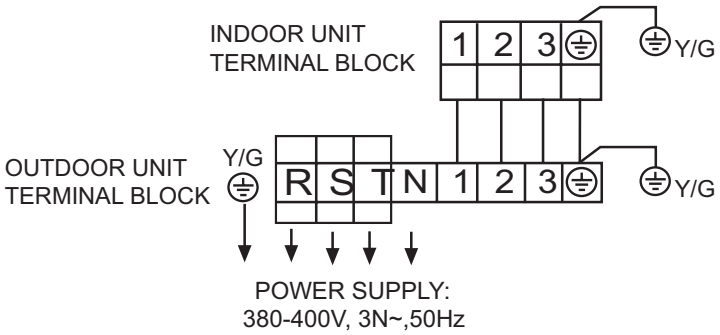
Select wire sizes and circuit protection from table below. (This table shows 20 m length wires with less than 2% voltage drop.)

Item / Model	Phase	Circuit breaker		Power source wire size (minimum) (mm^2)	Earth leakage breaker	
		Switch breaker (A)	Overcurrent protector rated capacity (A)		Switch breaker(A)	Leak current(mA)
AD362AHERA	3	30	20	2.5	30	30
AD362AHERA	1	40	30	6.0	40	30

(2) Wiring connection

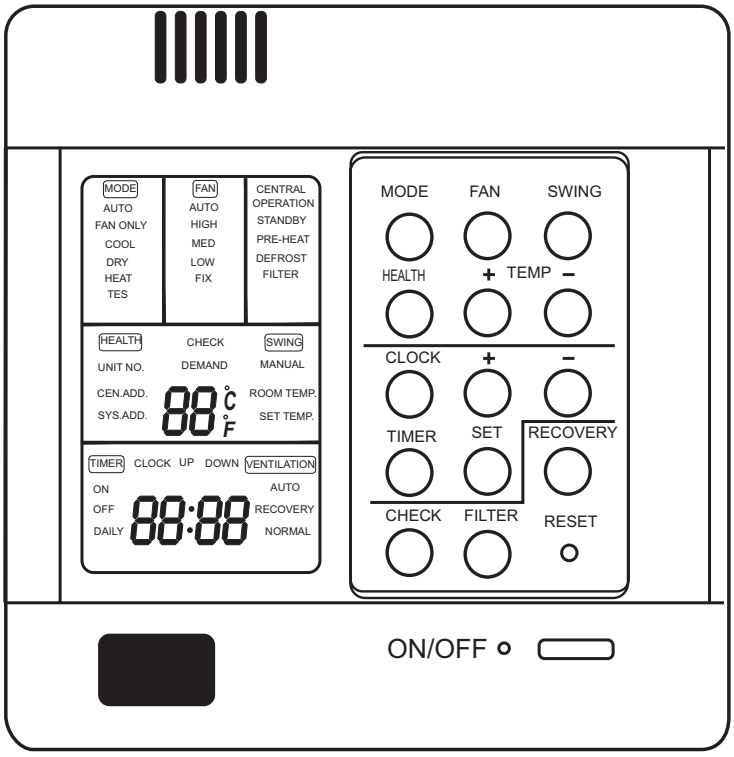
Make wiring to supply power to the outdoor unit, so that the power for the indoor unit is supplied by terminals.



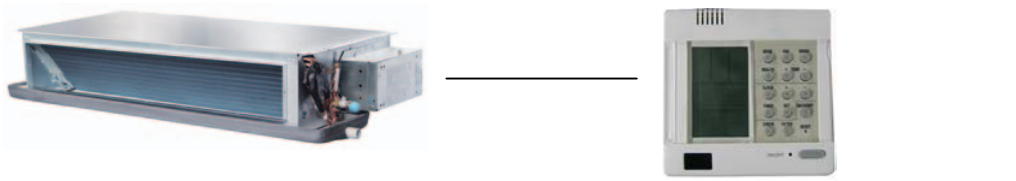


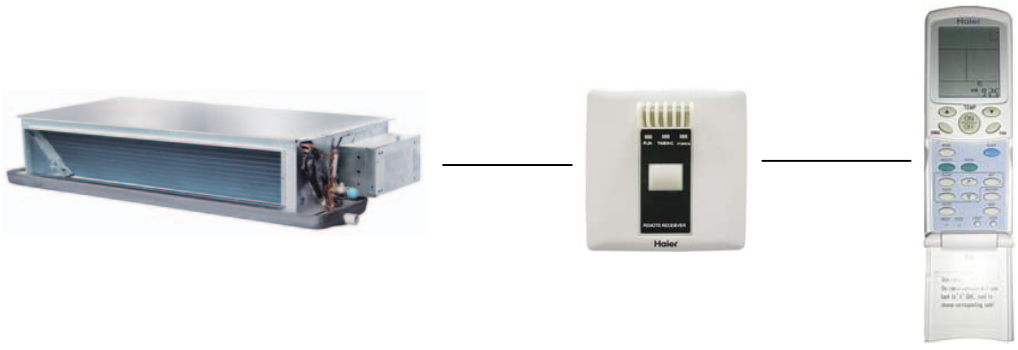
7. Controller functions

For duct type, the indoor unit can be controlled by wired controller YR-E12 as standard control or by remote controller YR-H71 and remote receiver RE-01 as optional control.



As for the connection method, please refer to below figures:





8. Electrical Control Functions

1.General features

1.1 Control mode: remotr or wired control + connecting port of long-distance control + passive port control.

1.2 Temperature control: 16-30℃;

1.3 Precise of temperature control: ±1℃;

1.4 Indoor fan speed: AUTO, HIGH, MIDDLE, LOW (no AUTO when in FAN mode);

1.5 Swing control: the swing are controlled by the synchronous motor, main control board receive usable signal and set in swing mode or remain in other mode;

1.6 running mode: AUTO , COOL, DRY, FAN and HEAT;

1.7 Healthy function: 5VDC UV generator, 12VDC negrative ion generator - high voltage collecting-dirt, 220VAC negrative ion generator – oxygen pump;

1.8 Filter up-down control: adopt double-direction synchronous motor;

1.9 Auxiliary electric heating function: 12VDC control signal, 220VAC control signal or control switch;

1.10 Fresh air control: 12VDC DC motor,220VAC AC control port output;

1.11 CLOCK setting, TIMER ON, OFF, ON/OFF and SLEEP fuction (only TIMER function is viable and temperature variety is unviable when running the SLEEP function in FAN mode);

1.12 Drain system function: Water level inspection and water pump control

1.13 Compulsory cooling operation;

1.14 Safety and protection devices: 3-minute protection for compressor startup, freeze protection device, overheat protection device, temperature cutoff protection, sensor failure, drainage, pressure, communication etc. protection.

1.15 Indoor ambient temperature, indoor and outdoor coil temperature inspection.

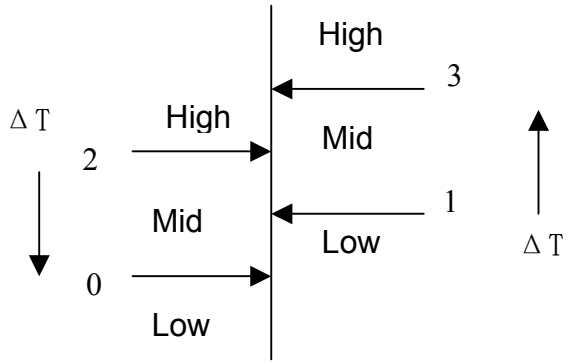
1.16 start current control: the outdoor fan start after compressor running 2s in normal situation.

2. LED function:

The LED for remote control type includes POWER, TIMER, COMPRESSOR, WATER PUMP; the POWER LED also indicate failure; when the unit is switched on by the controller, the POWER LED will be ON, when being switched off, the POWER LED will be OFF.; If the controller is in TIMER and SLEEP mode, the TIMER LED will be on; if it is not in TIMER and SLEEP mode, the TIMER LED will be off. When the compressor is running, the compressor LED will be on; when it stops, this LED will be off. POWER LED flashes when there are system failure, the flash times ti indicate the failure code.

3. Indoor AUTO FAN control

a) If the unit enters AUTO FAN for the first time, when ΔT＞2, select high speed; when ΔT≤0, select low speed; or it will select med speed; when thermostat is OFF, fan will be low speed. (the conversion temperature difference is 1 degree).



b) If the present fan speed is AUTO HIGH, when ΔT＜2, fan speed will change to AUTO MED.

c) If the present fan speed is AUTO MED, when ΔT＜0, fan speed will change to AUTO LOW; when ΔT＞3, fan speed will change to AUTO HIGH.

d) If the present fan speed is AUTO LOW, when ΔT＞1, fan speed will chenge to AUTO MED.

e) Fan speed conversion in AUTO FAN mode: the conversion will delay for 3 minutes from HIGH to LOW, and no delay from LOW to HIGH.

f) When the fan speed is HIGH/LOW/MED, on the condition that the protection does not act, the unit will run at the set fan speed; when the protection acts, for the sake of the normal operation, the fan speed will be forced to conversion; in Dry mode, fan motor will be changed as request.

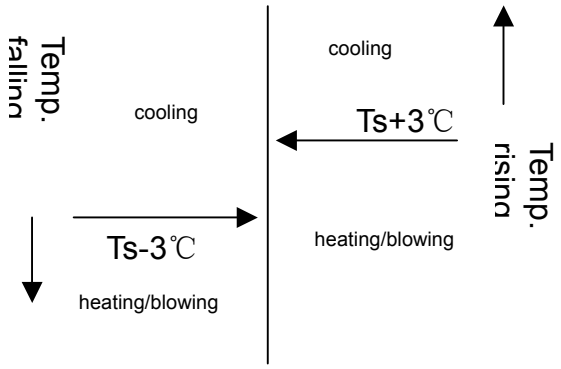
4. AUTO mode control

4.1 When entering AUTO for the first time, the unit will select the running mode due to the below

conditions, then perform the selected mode.

Tr≥Ts-3℃ select COOL mode (includes FAN mode)

Tr＜Ts-3℃ select HEAT or FAN mode



4.2 After entering the AUTO mode, the mode can change over among COOL, HEAT or FAN modes according to the indoor ambient temperature (conversion temperature difference is ±3℃).

4.3 If the unit is in COOL mode, when it arrives compressor-stop temperature, the compressor will stop; after compressor stops for 15 minutes, the unit will check the room temperature, if Tr＜Ts-3℃, the unit will enter HEAT or FAN mode, or the unit will still be in COOL mode;

4.4 For the heat pump unit, if the unit is in HEAT mode at present, when it arrives compressor-stop temperature, the compressor will stop; after the compressor stops for 15 minutes, the unit will check the room temperature, if Tr＞Ts+3℃, the unit will enter COOL mode, or it will still be in HEAT mode.

4.5 For cooling only unit, if the unit is at FAN mode, if Tr＞Ts+3℃, the unit will enter COOL mode.

4.6 When the unit is in HEAT mode, if indoor heat exchanger temperature rises up to over 63℃, the unit will change into COOL mode. And within 1 hour, the heat exchanger temperature will not be limited, the heating operation will stop temporarily. 1 hour later, the unit will select the proper mode due to the above condition.

5. COOL mode control

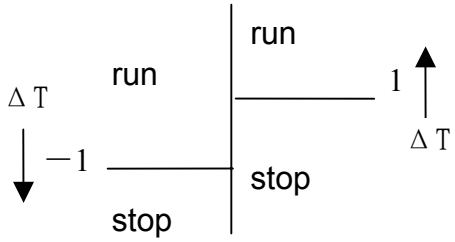
5.1 4-way valve being powered off, compressor run/stop will depends on the temperature difference between the room temperature and the set temperature.

5.2 In cooling mode, every time the compressor starts up, within 6 minutes, the compressor will not be limited by the temperature sensor, but the set temperature change, shutoff signal and protection action will not be limited by 6-minute protection, and the compressor can stop immediately.

5.3 ΔT≥1 compressor will run;

ΔT≤-1 compressor will stop;

-1<ΔT<1 compressor will stay in original state



5.4 Anti-freezed protection (invalid in compulsory operation, trial running, heating mode)

When the unit has run for over 6 minutes after compressor starts up, if indoor coil temperature Tg<1℃, the compressor and the outdoor motor will stop, and the unit will change to FAN mode; 9 minutes later after compressor stops and when indoor coil temperature rises to 10℃, the unit will resume to COOL mode, the compressor and the outdoor motor will run again.

5.5 Outdoor fan control: (realized by outdoor when with outdoor conmmunication function)

if the temp. of indoor coil sensor Tg<6℃, control the outdoor fan by the temp. of outdoor coil sensor;

if the temp. of outdoor defrost sensor Tc<34℃, the outdoor fan will be OFF and lasted 45s at least;

if the temp. of outdoor defrost sensor Tc＞44℃, the outdoor fan will be ON;

if the temp. of outdoor defrost sensor 34℃≤Tc≤44℃, the outdoor fan will remain in the original state.

5.6 Temperature cutoff protection

In cooling mode, the unit will check indoor coil temperature every time the compressor has run for 1 minutes, when indoor coil temperature Tg>Tr＋5, the unit will stop and 3 minutes later restart up; if the temperature cutoff occurs for 3 times continuously, the unit will stop and alarm.

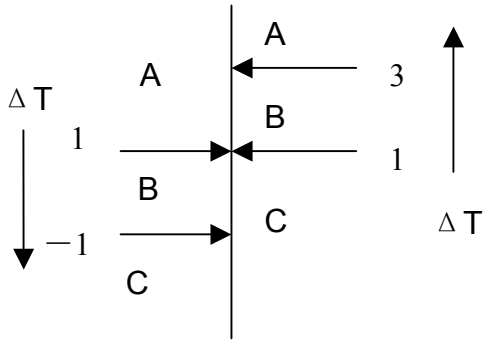
6. DRY mode control

6.1 When the uint enters DRY mode for the first time, the compressor, outdoor motor and indoor motor will perform according to the below conditions:

ΔT＞2, the compressor and the outdoor motor will run continuously, indoor motor will run at the set

speed, this area is defined as Area A;
0≤ΔT≤2, the compressor and the outdoor motor will always run for 10 minutes and then stop for 6 minutes, indoor motor will be LOW speed, this area is defined as Area B;
ΔT<0, the compressor and the outdoor motor will stop, indoor motor will run at Low speed, this area is defined as Area C.

6.2 After the unit is running in DRY mode, the system will change over among Area A, Area B, and Area C (the conversion temperature difference ±1℃)



If the system is in Area A, when ΔT<1, change to Area B;
If the system is in Area C, when ΔT>1, change to Area B;
If the system is in Area B, when ΔT>3, change to Area A;
When ΔT<−1, change to Area C.

6.3 Anti-freezed protection (invalid in compulsory operation, trial running, heating mode)

When the unit has run for over 6 minutes after compressor starts up, if indoor coil temperature Tg<1℃, the compressor and the outdoor motor will stop, and the unit will change to FAN mode; 9 minutes later after compressor stops and when indoor coil temperature rises to 10℃, the unit will resume to COOL mode, the compressor and the outdoor motor will run again.

6.4 Outdoor fan control: (realized by outdoor when with outdoor conmmunication function)

if the temp. of indoor coil sensor Tg<6℃, control the outdoor fan by the temp. of outdoor coil sensor;

if the temp. of outdoor defrost sensor Tc<34℃, the outdoor fan will be OFF and lasted 45s at least;

if the temp. of outdoor defrost sensor Tc>44℃, the outdoor fan will be ON;

if the temp. of outdoor defrost sensor 34℃≤Tc≤44℃, the outdoor fan will remain in the original state.

6.5 Temperature cutoff protection

In cooling mode, the unit will check indoor coil temperature every time the compressor has run for 1 minutes, when indoor coil temperature Tg>Tr+5, the unit will stop and 3 minutes later restart up; if the temperature cutoff occurs for 3 times continuously, the unit will stop and alarm.

7. HEAT mode control

7.1 4-way valve control: in heating mode, compressor startup----4-way valve being electrified 10 seconds ahead; compressor running----4-way valve retains original state; compressor shutoff----4-way valve being powered off 2 minutes and 50 seconds later (except for defrosting, 4-way valve being electrified 5 seconds ahead, and being powered off 55 seconds later).

7.2 In heating mode, for everytime the compressor startup (thermostat ON), within 6 minutes, the 4-way valve will not be limited by the temperature sensor, but for the set temperature change, shutoff signal and the protection, the compressor can stop immediately without 6-minute limitation.

7.3 ΔT≥1 compressor running, indoor motor runs at anti-cold air mode;
ΔT≤-1 compressor stops, indoor motor runs at blowing remaining heat mode;
-1<ΔT<1 compressor retains original state

7.4 Overheat protection (for the unit with outdoor PCB, the outdoor motor is controlled by outdoor unit, but the compressor is still controlled by indoor unit, and their temperature points will not be accordant completely)

In heating mode, compressor has started up and indoor motor has run for over 30 seconds, if indoor coil temperature Tg>60℃, outdoor motor will stop; if Tg<56℃, and outdoor motor has stop for 45s, outdoor motor will run again; if Tg>73℃, the compressor will stop and indoor motor will run according to the thermostat state. After the compressor stops for 3 minutes and Tg reduces to 48℃, the unit will resume to heating mode, and the compressor and the outdoor motor will run again.

7.5 Temperature cutoff protection

In heating mode (besides the defrosting), the unit will check indoor coil temperature every time the compressor has run for 1 minutes, when indoor coil temperature Tg<Tr-5, the unit will stop and 3 minutes later restart up; if the temperature cutoff occurs for 3 times continuously, the unit will stop and alarm.

7.6 Anti-cold air function in heating mode

After entering heating mode, or last defrosting is over, the compressor will start up, if Tg＜28℃, indoor motor will stop; if 38℃＞Tg≥28℃, indoor motor will run at low speed; if Tg≥38℃ or the compressor has run for over 4 minutes, indoor motor will run at the set speed; once the motor has started up, it will not stop because of Tg reduction.

7.7 Blowing remaining heat function

In heating mode, the thermostat is OFF, the compressor stops, indoor motor will run at low speed until Tg＜28℃ and has run for 50 seconds at least.

Note: in heating mode, “the compressor stops----indoor motor delays to stop” adjust if the pipe blows remaining heat; “the compressor startup----indoor motor delays to start up” adjust if the pipe is anti-cold air; in other conditions, the compressor and the indoor motor are allowable not to be in company. In cooling mode, the motor will run according to the control, not together with the compressor.

7.8 Defrosting function in heating mode

In defrosting and when the compressor resumes to run for 3 minutes after defrosting is over, the unit will not adjust the sensor failure.

7.8.1 Manual defrost: In heating mode, the set temperature 30℃ and in high speed, in 5 seconds, press SLEEP button 6 times continuously, then the buzzer will sound 3 times, you can enter the manual defrosting. At this moment, the unit will not adjust the enter condition of defrost and begin to defrost function directly, whose procedure is as the same as the auto defrost; the quit condition is that the defrosting time is up to 5 minutes.

7.8.2 Auto defrost enter condition: a) the compressor has run for 45 minutes continuously or for 75 minutes in all and has run for over 10 minutes continuously. b) the compressor and outdoor fan running normally. c) the temp. of indoor coil sensor lower than 45℃, d) the defrosting temp. lower than –8℃ (use the defrosting start signal from outdoor in the condition of with outdoor communication).

7.8.3 Auto defrost quit condition: The defrosting temp. over 14℃ or the defrosting time is over 12 minutes (use the defrosting end signal from outdoor in the condition of with outdoor communication)

7.8.4 Defrost process : a) enter defrosting mode, the compressor, outdoor and indoor fan motor stops; b) 55 seconds later, 4-way valve will be reverse, after more 5 sensonds, compressor begins to run; c) defrosting is over, compressor stops, outdoor fan running at high speed; d) 55 seconds later, 4-way valve runs and compressor starts up. The indoor fan motor will run at anti-cold air condition.

7.8.5 For the unit with auxiliary electric heating function:

a. If the auxiliary electric heating function is working when the defrosting condition is met, please stop electric heater firstly, 20 seconds later, defrosting can begin;
b. After defrosting, the unit will adjust the working state of electric heater according to the setting before defrosting.

7.9 Auxiliary electric heating function (valid in heating mode or heating state in AUTO mode)

Enter condition: 1) ΔT>1; 2) Thermostat ON and running for 1 minute; 3) Tr<26℃; 4) Indoor motor running; 5) Electric heating function start signal available (cancelled); 6) The system working in heating mode or in heating state of AUTO mode; 7) Tg<48℃

If the above conditions can all be met, the electric heating function will work.

Quit condition: 1) ΔT≤1; 2) Thermostat OFF; 3) Tr>26℃; 4) Indoor motor stops; 5) Electric heating function start signal not available (cancelled); 6) The system in non-heating operation; 7) Tg>52℃

If one of the above conditions can be met, the electric heater will stop.

8. FAN mode control

The compressor and the outdoor motor will stop running, indoor motor can be set at high/med/low speed, the fan blade can swing or stay at one position. In this mode, you can set the TIMER and SLEEP function.

9. CLOCK setting and TIMER function

The unit can set 24-hour TIMER ON/OFF, and the min. unit is 1 minute, after being set, the timer lamp of indoor will be on, and after the timer is over, the timer lamp will be off.

TIMER ON: RUN LED is off, compressor LED is off, and TIMER LED is on, the unit is in stop state. When timer is over, the unit begins to run, and the timer LED is off. The unit operation begins from

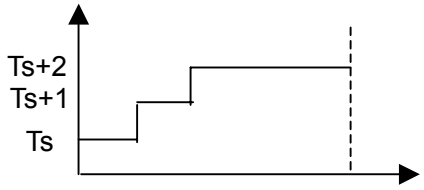
receiving the timer signal for the last time. The SLEEP function only can be set before the TIMER ON begins.

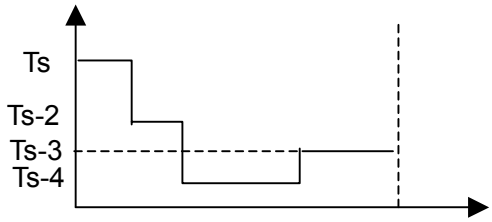
TIMER OFF: the unit running, the timer LED on, while the timer is over, timer LED off, the unit will stop, the sleep can be set, the sleep time will replace the original time of TIMER ON/OFF.

TIMER ON/OFF set at the same time: when the timer on/off is set, the timer LED will be off; the SLEEP function can be set, the sleep time will replace the original time of TIMER ON/OFF.

10 SLEEP function (energy saving function at night)

101 Standard sleep function: in cooling or dry mode, after running at SLEEP mode for 1 hour, the set temperature will rise 1℃, another 1 hour later, the set temperature will rise another 1℃; the unit continues running for 6 hours, then the unit will stop.





10.2 Standard sleep function: in heating mode, after running at SLEEP mode for 1 hour, the set temperature reduces 2℃, another 1 hour later, the set temperature will reduce 2℃, and another 3 hours later, the set temperature rises 1℃; the unit continues running for 3 hours, then the unit will stop.

10.3 Non-standard SLEEP function: the sleep function can realize 1~8 hours sleep mode when being combined with the TIMER function.

1）When in Auto mode, the unit will make SLEEP operation due to the setting.
2）After setting SLEEP function, the clock can not be adjusted.
3）If sleep time is no more than 8 hours, when the time arrives, the unit wil shut off.
4）If sleep function is set after setting TIMER OFF function, the unit will execute as the SLEEP function.
5）If SLEEP function is set, the TIMER function can not be set.
6）If sleep function is set after setting TIMER ON function, the sleep function only can be set befroe the TIMER ON time arrives.
7）After setting sleep function, press CLOCK button to check the clock; press TEMP button to display the set temperature, and press again to change the set temperature.

11 Water level inspection and water pump control

1) In COOL (including cooling state of AUTO mode and the compulsory cooling) and DRY mode, as long as the compressor runs, water pump will work; and once the compressor stops, water pump will stop 5 minutes later;

2) In standby state of cooling mode, heating mode and fan mode (including auto fan mode), after water tank is full, the float switch will disconnect, if the controller detects this signal for 2 seconds, the water pump will begin to work. After the float resets, water pump will continue working and stops 5 minutes later;

3) If the water-full signal is detected for over 5 minutes, the compressor will stop; water pump will work for 5 minutes and stop for 5 minutes, then repeat as a cycle, until the float resets, the water pump will stop 5 minutes later; if water pump has repeated for 4 cycles, the float can not reset, and the unit will alarm water drainage abnormal. And the water pump will continue the cycle.

12. System protection

12.1 3-minute protection for compressor startup

After the compressor stops, at least 3 minutes later, the compressor can restart up; the compressor can restart up. Being electrifed for the first time, there is 3-minute delay protection.

12.2 Time shorting function

If the time shorting port is in short circuit, the unit will perform a 1/60 time shorting control.

12.3 High pressure protection

After compressor is running for 3 minutes, the unit will check the pipe pressure, when the pipe pressure is too high, 30 seconds later, compressor and outdoor fan motor will stop, and then 3 minutes later, the unit will be normal. Within 30 minutes, if the compressor stops and will send failure because of too high pressure for 3 times.

12.4 Low pressure protection

After compressor is running for 3 minutes, the unit will check the pipe pressure, when the pipe

pressure is too low and low pressure switch is running for 30 senconds, compressor and outdoor fan motor will stop and will send failure

13. Trouble code

The remote receiver, wired controller and indoor PCB indicator all can indicate the failure code.

Remote control indoor PCB flash times	Wired controller display	Central controller display	Fault description	Possible cause	Remedy
10	08(08H)	21D	Fault in drain system	Float switch is open 25m or longer	due to the signal, resumable
1	01(01H)	01D	Indoor ambient temp. sensor failure	sensor broken down or short circuit for more than 2m continuously	due to the signal, resumable
2	02(02H)	02D	Indoor pipe temp. sensor failure	sensor broken down or short circuit for more than 2m continuously	due to the signal, resumable
3	74(4AH)	11D	Outdoor ambient temp. sensor failure	sensor broken down or short circuit for more than 2m continuously	due to the signal, resumable
4	73(49H)	12D	Outdoor pipe temp. sensor failure	sensor broken down or short circuit for more than 2m continuously	due to the signal, resumable
5	72(48H)	10D	Overcurrent	Detector CT current is above the limit 3 times within 30m.	Need to be checked, reset
6	83(53H)	14D	High pressure malfunction	High pressure switch acts for 3 times in 30m	Need to be checked, reset
7	71(47H)	22D	Power failure	Wrong phase, phase failure or loss	Need to be checked, reset
8	07(07H)	06D	Communication failure between wired controller and indoor unit	communication abnormal for more than 4m continuously	due to the signal, resumable
9	06(06H)	05D	Communication failure between indoor and outdoor units	communication abnormal for more than 4m continuously	due to the signal, resumable
11	11(0BH)	30D	External alarm signal input	External alarm is cut out for 10s or longer	due to the signal, resumable
12	03(03H)	20D	Fault in coil/suction line temp. sensor	sensor broken down or short circuit for more than 2m continuously	due to the signal, resumable
13	13(0DH)	31D	Temperature shut-off	Directional valve malfunction repeats 3 times	Need to be checked, reset
14	76(4CH)	15D	Fault in discharging temp. sensor	sensor broken down or short circuit for more than 2m continuously	due to the signal, resumable
15	05(05H)	17D	EEPROM error	EEPROM data loss	Default operation
16	84(54H)	26D	Low pressure malfunction	low pressure switch is activated	Need to be checked, reset
17	80(50H)	15D	Compressor overheat	Detected temperature of discharge line is higher than 120℃	Resrorable when lower than 100℃
18	12(0CH)	23D	Fault in operation mode	Indoor units operate in different modes	Resrorable in same operation mode
19	75(4BH)	18D	Outdoor coil B(suction sensor-multi)	sensor broken down or short circuit for more than 2m continuously	due to the signal, resumable
20	77(4DH)	15D	Outdoor discharge B (oil temp	sensor broken down or short circuit for more than 2m continuously	due to the signal, resumable

			temp. sensor-multi)		
21	20(32D)	07D	Module failure	Module overheat, overcurrent, short-circuit	due to the signal, resumable
22	36(54D)	08D	Fault in zero-load	Current sensor failure or compressor is not started	due to the signal, resumable

14 Jumper selection (√shows jumper connected, ON; ×shows jumper disconnected, OFF; * shows no limitation)

	J1	J2	J3	J4
Wired control/ infrared control	√/×	*	*	*
Temp. compensation available/not available	*	√/×	*	*
With/no outdoor PCB	*	*	√/×	*
Cooling only/heat pump	*	*	*	√/×
			J5	J6
Time shorting switch	√/×	*	*	*
Forced or not	*	√/×	*	*
Ornarment or not	*	*	×/√	*
Oxygen or not	*	*	*	×/√
	J7	J8	J9	J10
Other/2P convertible	√/×	*	*	*
single split/ multi split	*	√/×	*	*
Indoor unit address 0/other	*	*	√/×	*
2P convertible /single blade	*	*	*	√/×

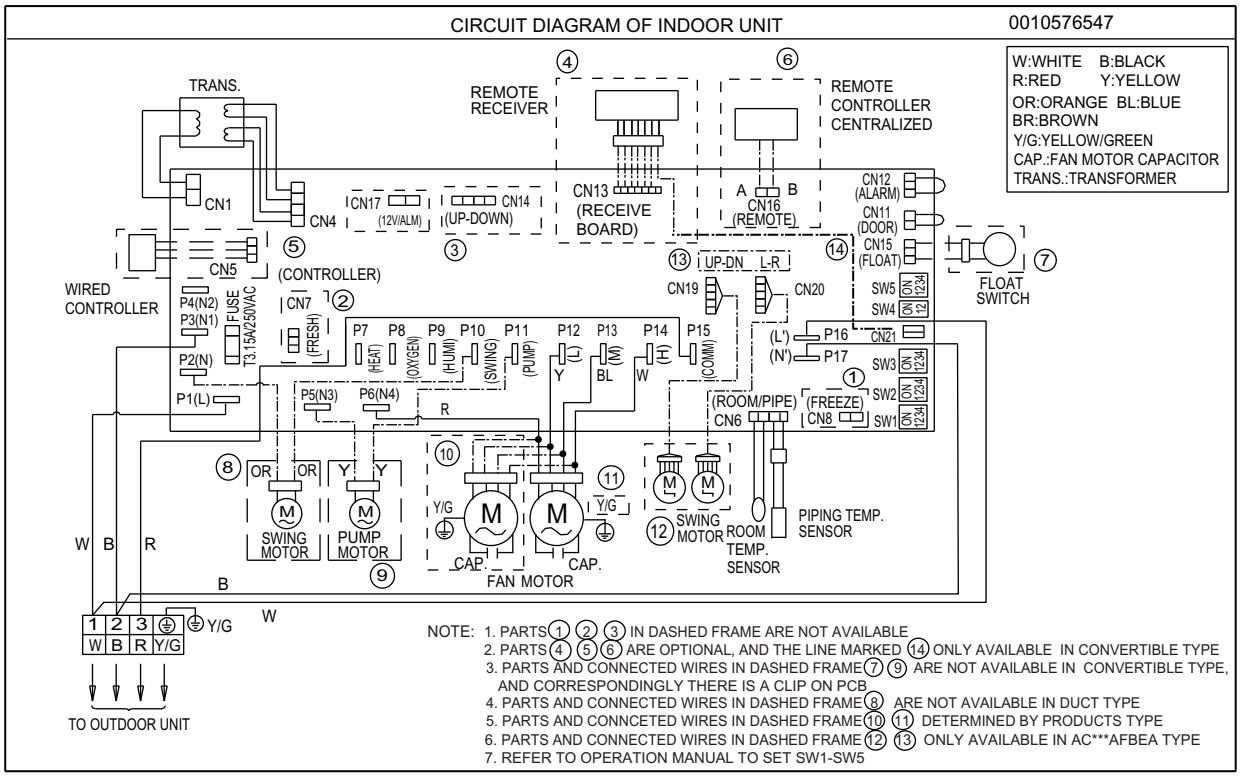
15. Network address selection (√shows jumper connected, ON; ×shows jumper disconnected, OFF)

	SW1				SW2			
address	1	2	3	4	1	2	3	4
1	×	×	×	×	×	×	×	× shows passive port control AND
2	√	×	×	×	×	×	×	
3	×	√	×	×	×	×	×	
4	√	√	×	×	×	×	×	
5	×	×	√	×	×	×	×	√ showes passive port control – the later entering in priority
6	√	×	√	×	×	×	×	
……		……	……	……	……	……	……	
126	√	×	√	√	√	√	√	
127	×	√	√	√	√	√	√	
128	√	√	√	√	√	√	√	

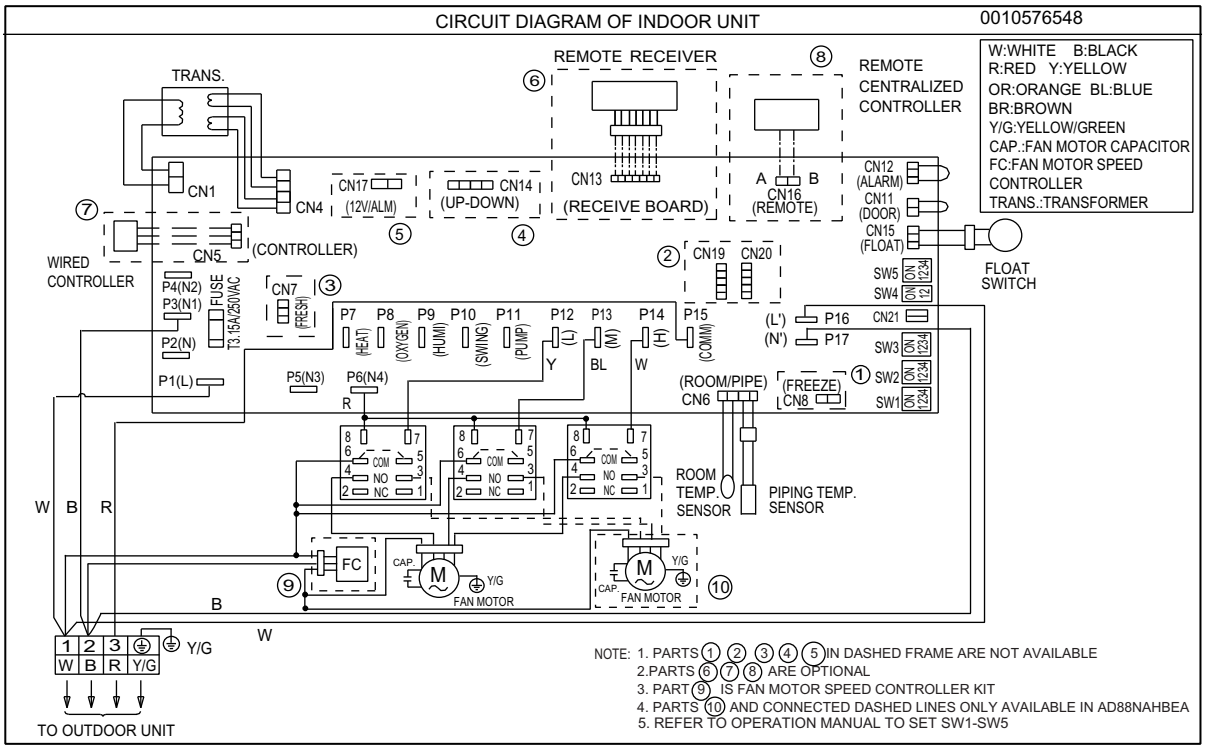
9. Electric data

9.1 Wiring diagram

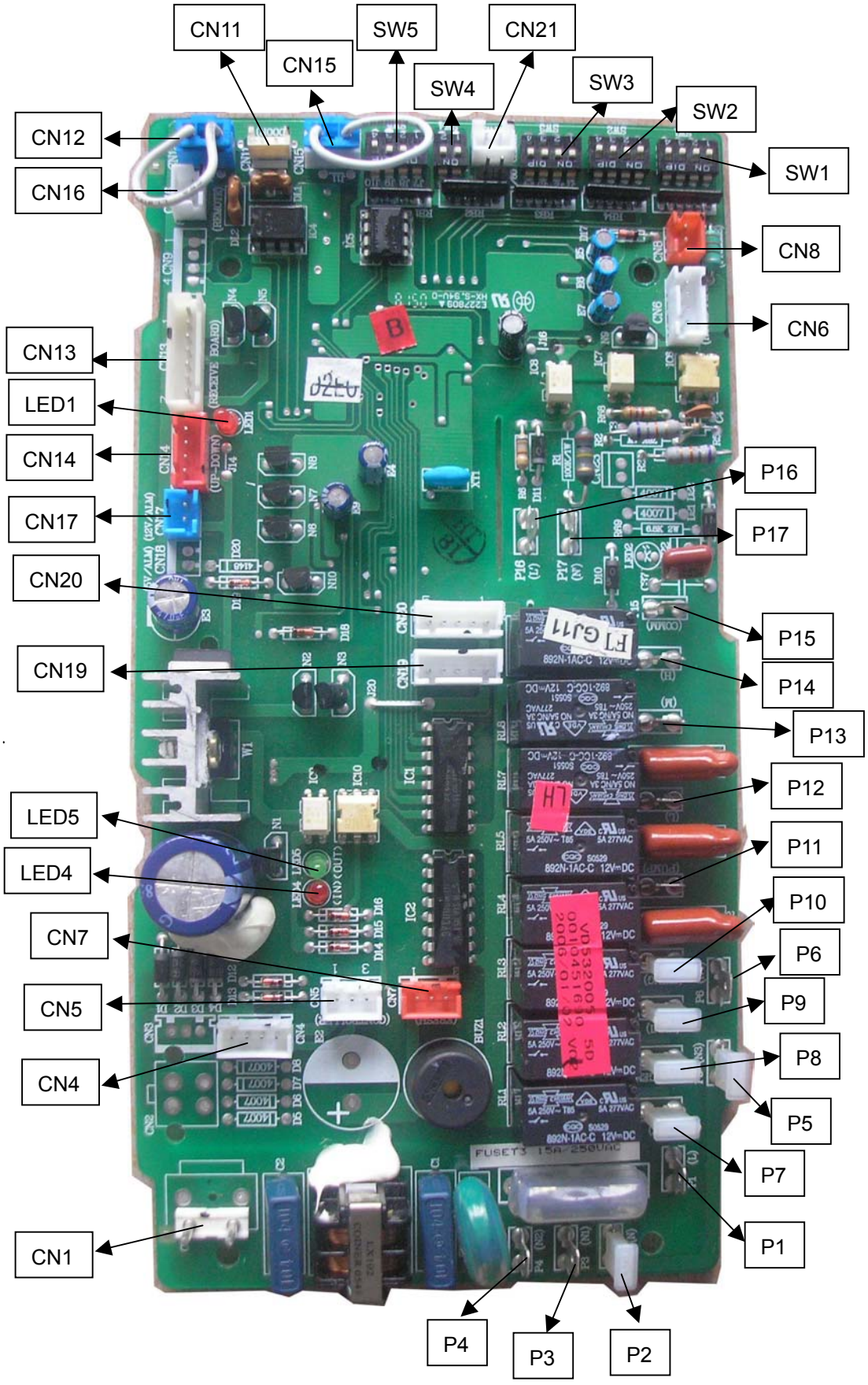
AD182ALERA


CIRCUIT DIAGRAM OF INDOOR UNIT
0010576547
W:WHITE B:BLACK
R:RED Y:YELLOW
OR:ORANGE BL:BLUE
BR:BROWN
Y/G:YELLOW/GREEN
CAP.:FAN MOTOR CAPACITOR
TRANS.:TRANSFORMER
TRANS.
REMOTE RECEIVER
REMOTE CONTROLLER CENTRALIZED
CN1
CN4
CN17 (12V/ALM)
CN14 (UP-DOWN)
CN13 (RECEIVE BOARD)
CN16 (REMOTE)
CN12 (ALARM)
CN11 (DOOR)
CN15 (FLOAT)
FLOAT SWITCH
WIRED CONTROLLER
CN5 (CONTROLLER)
CN7 (FRESH)
P4(N2) P3(N1) P2(N) P1(L)
FUSE T3.15A/250VAC
P7 (HEAT) P8 (OXYGEN) P9 (HUMI) P10 (SWING) P11 (PUMP) P12 (L) P13 (M) P14 (H) P15 (COMM)
UP-DN L-R
CN19 CN20
CN21
P16 (L') P17 (N')
SW5 SW4 SW3 SW2 SW1
P5(N3) P6(N4)
(ROOM/PIPE) CN6
(FREEZE) CN8
SWING MOTOR
PUMP MOTOR
CAP.
FAN MOTOR
ROOM TEMP. SENSOR
PIPING TEMP. SENSOR
TO OUTDOOR UNIT
NOTE: 1. PARTS 1 2 3 IN DASHED FRAME ARE NOT AVAILABLE
2. PARTS 4 5 6 ARE OPTIONAL, AND THE LINE MARKED 14 ONLY AVAILABLE IN CONVERTIBLE TYPE
3. PARTS AND CONNECTED WIRES IN DASHED FRAME 7 9 ARE NOT AVAILABLE IN CONVERTIBLE TYPE, AND CORRESPONDINGLY THERE IS A CLIP ON PCB
4. PARTS AND CONNECTED WIRES IN DASHED FRAME 8 ARE NOT AVAILABLE IN DUCT TYPE
5. PARTS AND CONNCETED WIRES IN DASHED FRAME 10 11 DETERMINED BY PRODUCTS TYPE
6. PARTS AND CONNECTED WIRES IN DASHED FRAME 12 13 ONLY AVAILABLE IN AC***AFBEA TYPE
7. REFER TO OPERATION MANUAL TO SET SW1-SW5

AD362AHERA



0010451690E for AD182ALERA and AD362AHERA



9.2 Sensor characteristic

model	name	code	sub-part code	characteristic
AD182ALERA	ambient temperature sensor	0010451323	001A3900003	R25=23KΩ±2.5% B25/50=4200K±3%
	coil temperature sensor	001A3900006	001A3900004	R25=10KΩ±3% B25/50=3700K±3%
AD362AHERA	ambient temperature sensor	001A3900005	001A3900003	R25=23KΩ±2.5% B25/50=4200K±3%
	coil temperature sensor	0010401922	001A3900004	R25=10KΩ±3% B25/50=3700K±3%

R25=23KΩ±2.5%
B25/50=4200K±3%

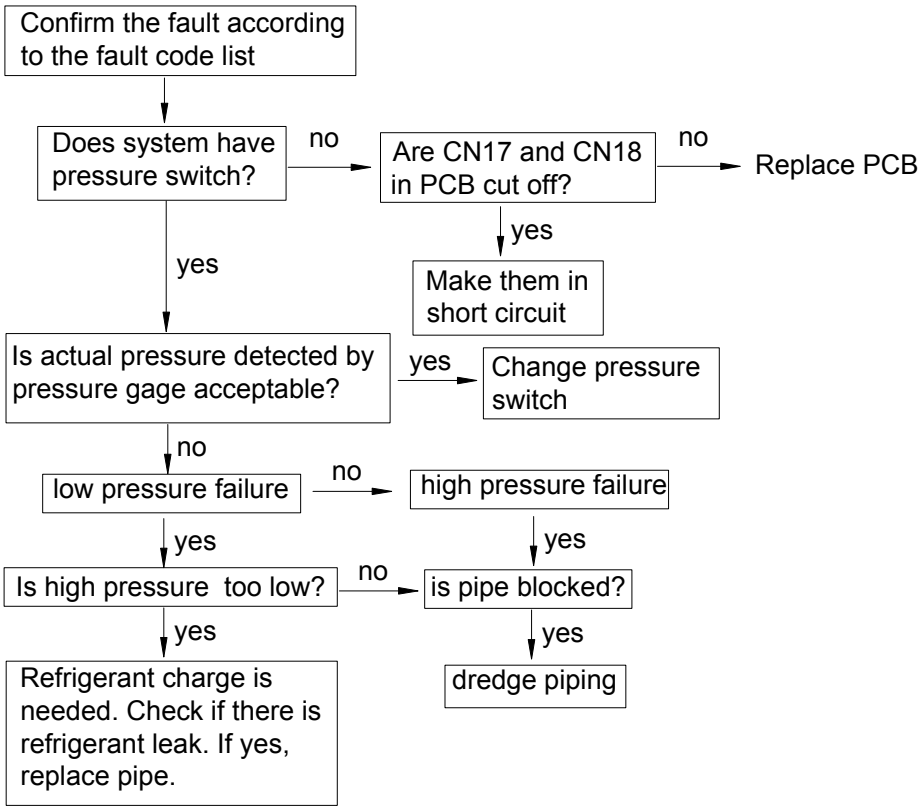
T(℃)	Rnom(KΩ)	T(℃)	Rnom(KΩ)
-20℃	281.34	24℃	24.12
-19℃	263.56	25℃	23
-18℃	247.04	26℃	21.94
-17℃	231.66	27℃	20.94
-16℃	217.35	28℃	19.99
-15℃	204.02	29℃	19.09
-14℃	191.61	30℃	18.23
-13℃	180.04	31℃	17.42
-12℃	169.24	32℃	16.65
-11℃	159.17	33℃	15.92
-10℃	149.77	34℃	15.22
-9℃	140.99	35℃	14.56
-8℃	132.78	36℃	13.93
-7℃	125.11	37℃	13.34
-6℃	117.93	38℃	12.77
-5℃	111.22	39℃	12.23
-4℃	104.93	40℃	11.71
-3℃	99.04	41℃	11.22
-2℃	93.52	42℃	10.76
-1℃	88.35	43℃	10.31
0℃	83.5	44℃	9.89
1℃	78.94	45℃	9.49
2℃	74.67	46℃	9.1
3℃	70.65	47℃	8.74
4℃	66.88	48℃	8.39
5℃	63.33	49℃	8.05
6℃	60	50℃	7.73
7℃	56.86	51℃	7.43
8℃	53.91	52℃	7.14
9℃	51.13	53℃	6.86
10℃	48.51	54℃	6.6
11℃	46.04	55℃	6.34
12℃	43.72	56℃	6.1
13℃	41.52	57℃	5.87
14℃	39.45	58℃	5.65
15℃	37.5	59℃	5.44
16℃	35.66	60℃	5.24
17℃	33.92		
18℃	32.27		
19℃	30.72		
20℃	29.25		
21℃	27.86		
22℃	26.54		
23℃	25.3		

R25=10KΩ±3%
B25/50=3700K±3%

T(℃)	Rnom(KΩ)	T(℃)	Rnom(KΩ)	T(℃)	Rnom(KΩ)
-20℃	90.79	24	10.43	68	2.09
-19	85.72	25	10	69	2.03
-18	80.96	26	9.59	70	1.96
-17	76.51	27	9.21	71	1.9
-16	72.33	28	8.84	72	1.85
-15	68.41	29	8.48	73	1.79
-14	64.73	30	8.15	74	1.73
-13	61.27	31	7.83	75	1.68
-12	58.02	32	7.52	76	1.63
-11	54.97	33	7.23	77	1.58
-10	52.1	34	6.95	78	1.54
-9	49.4	35	6.68	79	1.49
-8	46.86	36	5.43	80	1.45
-7	44.46	37	5.6		
-6	42.21	38	5.59		
-5	40.08	39	5.73		
-4	38.08	40	5.52		
-3	36.19	41	5.32		
-2	34.41	42	5.12		
-1	32.73	43	4.93		
0	31.14	44	4.9		
1	29.64	45	4.58		
2	28.22	46	4.42		
3	26.4	47	4.26		
4	25.61	48	4.11		
5	24.41	49	3.97		
6	23.27	50	3.83		
7	22.2	51	3.7		
8	21.18	52	3.57		
9	20.21	53	3.45		
10	19.3	54	3.33		
11	18.43	55	3.22		
12	17.61	56	3.11		
13	16.83	57	3.11		
14	16.09	58	2.9		
15	15.38	59	2.81		
16	14.71	60	2.72		
17	14.08	61	2.63		
18	13.48	62	2.54		
19	12.9	63	2.49		
20	12.36	64	2.38		
21	11.84	65	2.3		
22	11.34	66	2.23		
23	10.87	67	2.16		

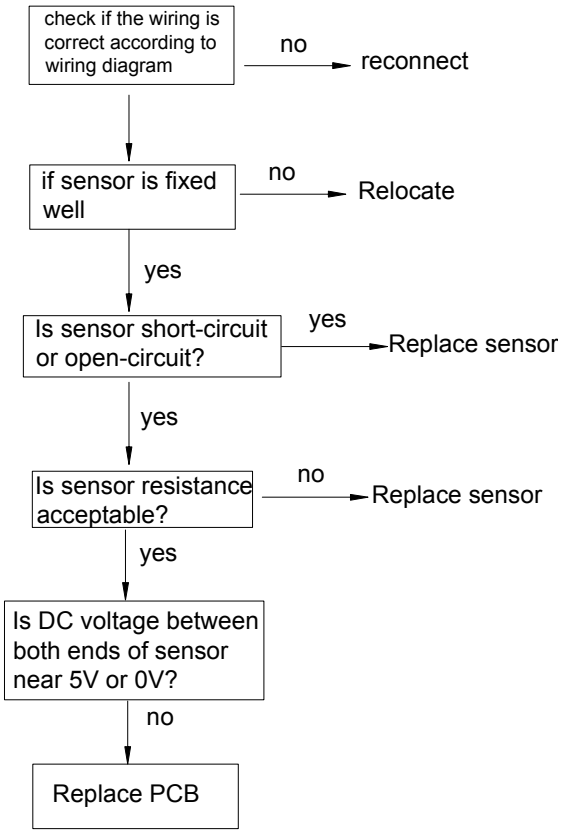
10. Troubleshooting

1) Pressure protection

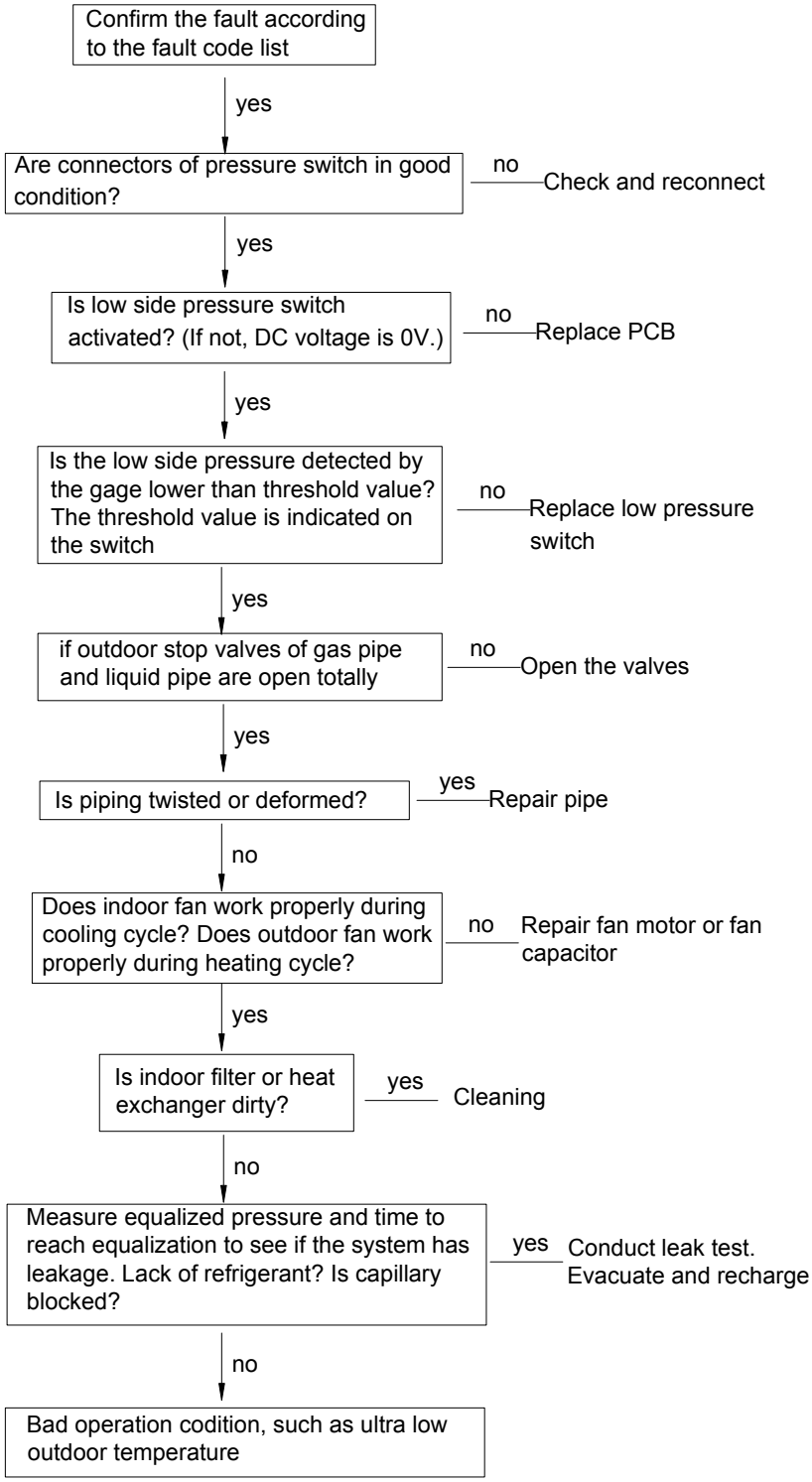


Note: The confirmation time of low pressure failure may be shorter, but high pressure failure confirmation time is at least 1 hour. Besides, take the ambient temperature into consideration.

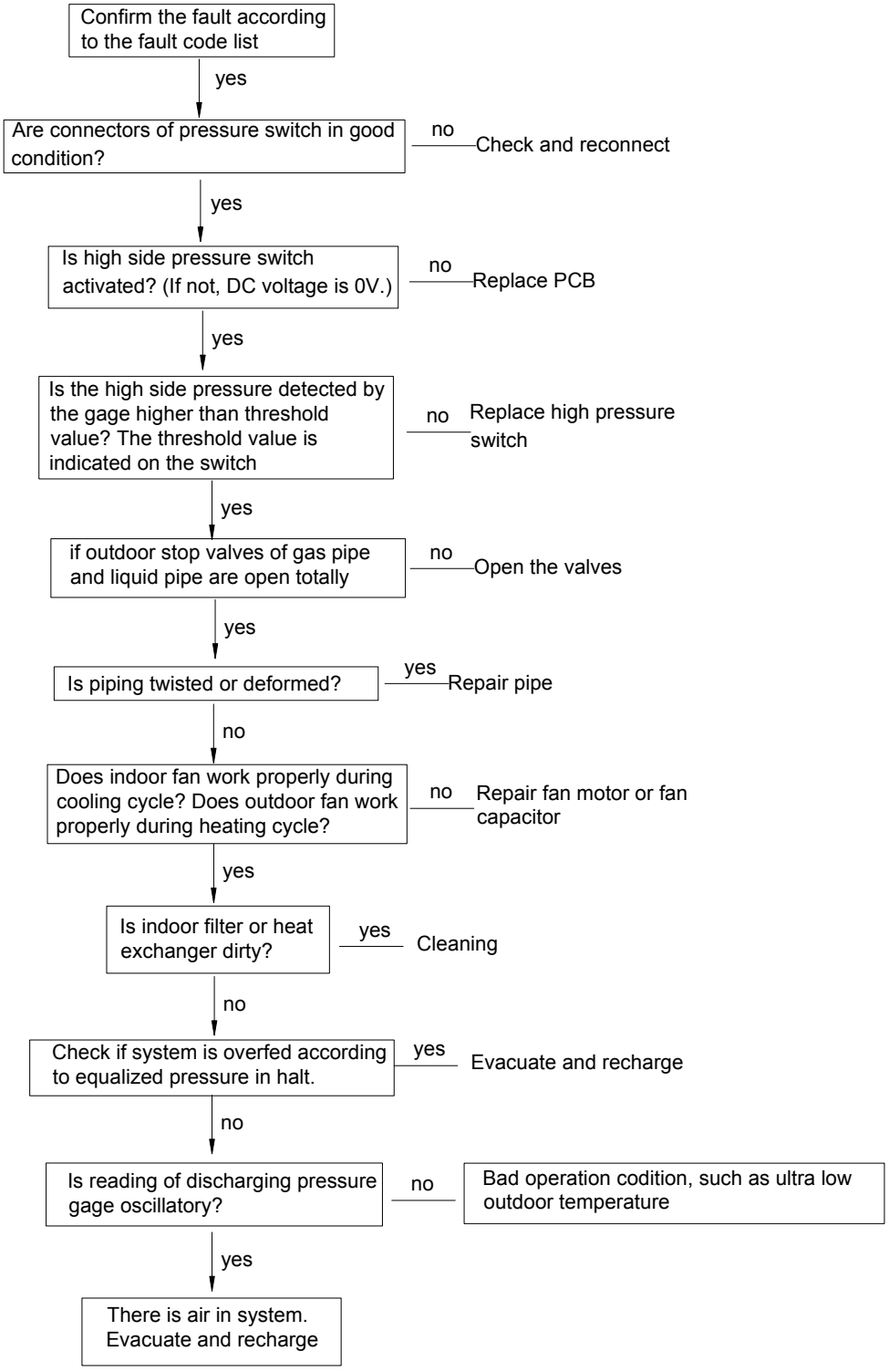
2) Sensor failure



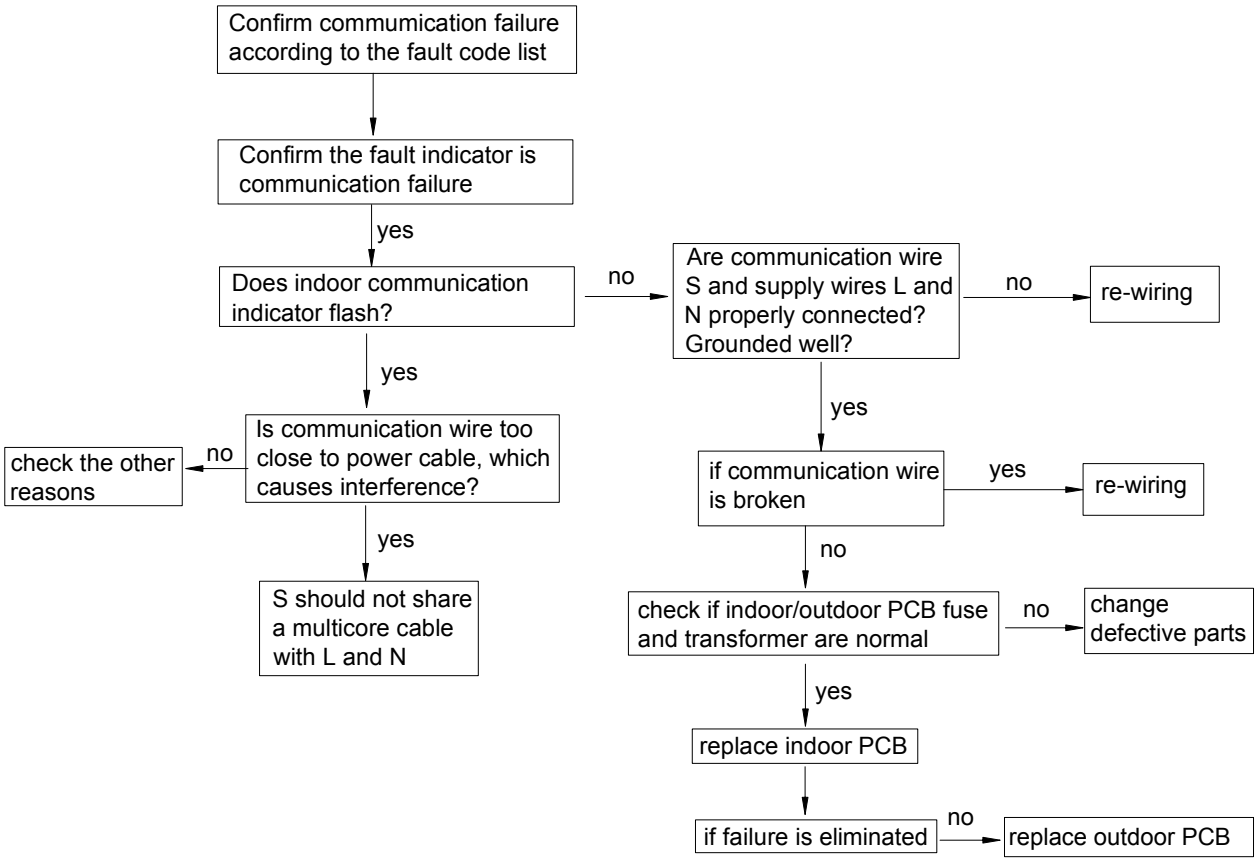
3) Low pressure protection


Confirm the fault according to the fault code list
yes
Are connectors of pressure switch in good condition?
no
Check and reconnect
yes
Is low side pressure switch activated? (If not, DC voltage is 0V.)
no
Replace PCB
yes
Is the low side pressure detected by the gage lower than threshold value? The threshold value is indicated on the switch
no
Replace low pressure switch
yes
if outdoor stop valves of gas pipe and liquid pipe are open totally
no
Open the valves
yes
Is piping twisted or deformed?
yes
Repair pipe
no
Does indoor fan work properly during cooling cycle? Does outdoor fan work properly during heating cycle?
no
Repair fan motor or fan capacitor
yes
Is indoor filter or heat exchanger dirty?
yes
Cleaning
no
Measure equalized pressure and time to reach equalization to see if the system has leakage. Lack of refrigerant? Is capillary blocked?
yes
Conduct leak test. Evacuate and recharge
no
Bad operation codition, such as ultra low outdoor temperature

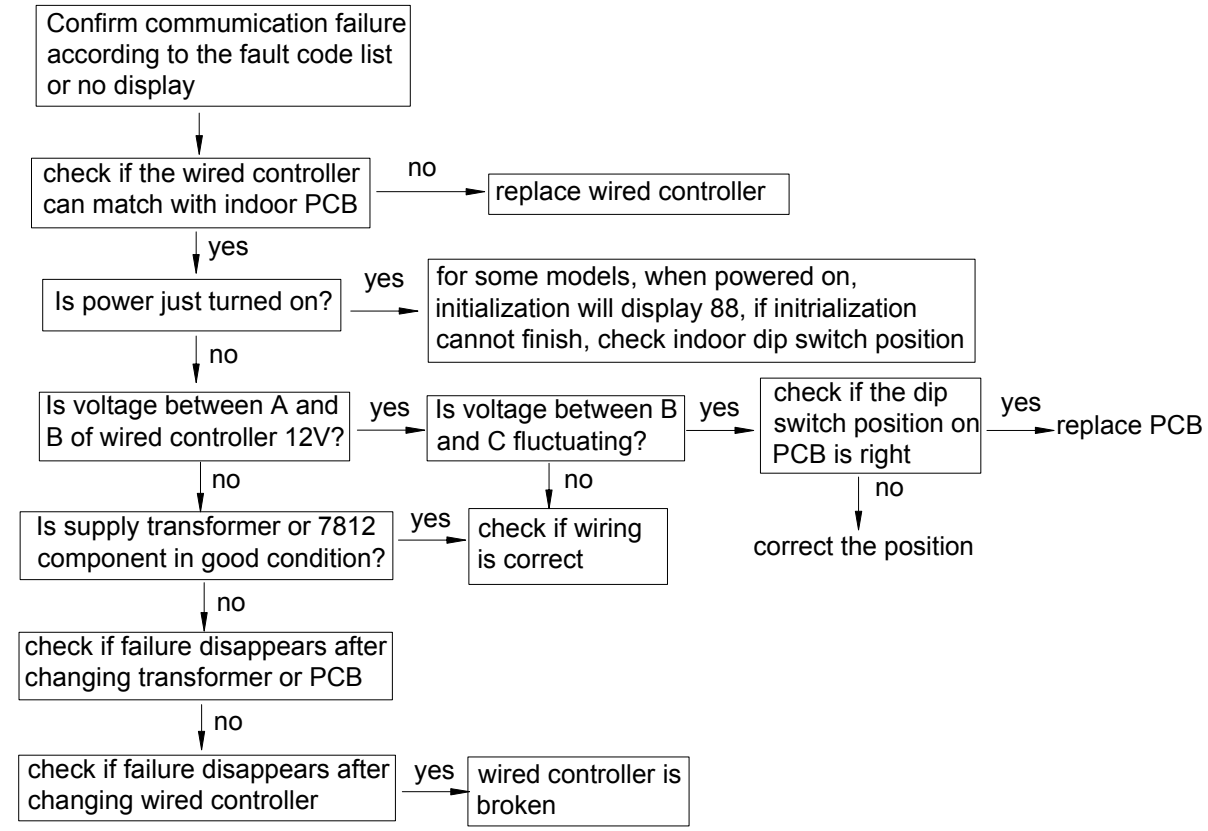
4) High pressure protection


Confirm the fault according to the fault code list
yes
Are connectors of pressure switch in good condition?
no
Check and reconnect
yes
Is high side pressure switch activated? (If not, DC voltage is 0V.)
no
Replace PCB
yes
Is the high side pressure detected by the gage higher than threshold value? The threshold value is indicated on the switch
no
Replace high pressure switch
yes
if outdoor stop valves of gas pipe and liquid pipe are open totally
no
Open the valves
yes
Is piping twisted or deformed?
yes
Repair pipe
no
Does indoor fan work properly during cooling cycle? Does outdoor fan work properly during heating cycle?
no
Repair fan motor or fan capacitor
yes
Is indoor filter or heat exchanger dirty?
yes
Cleaning
no
Check if system is overfed according to equalized pressure in halt.
yes
Evacuate and recharge
no
Is reading of discharging pressure gage oscillatory?
no
Bad operation codition, such as ultra low outdoor temperature
yes
There is air in system. Evacuate and recharge

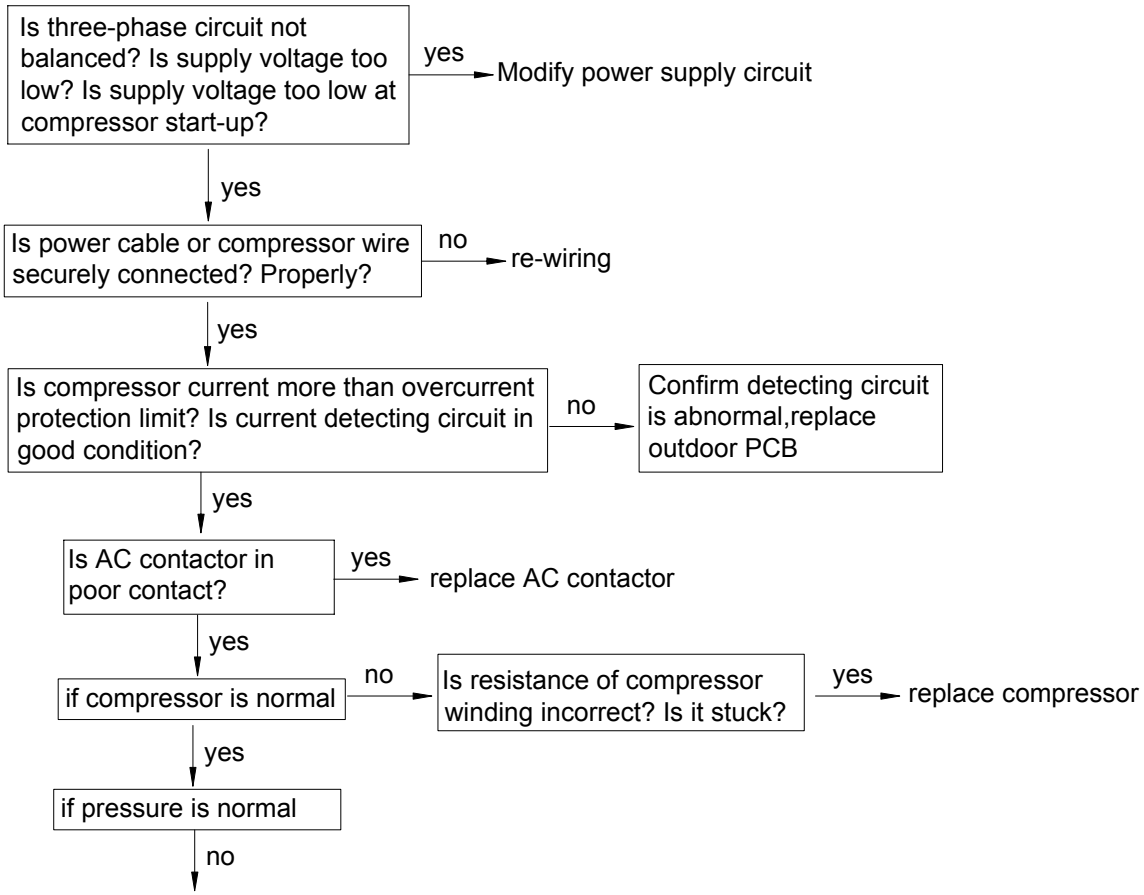
5) Communication error between indoor and outdoor units



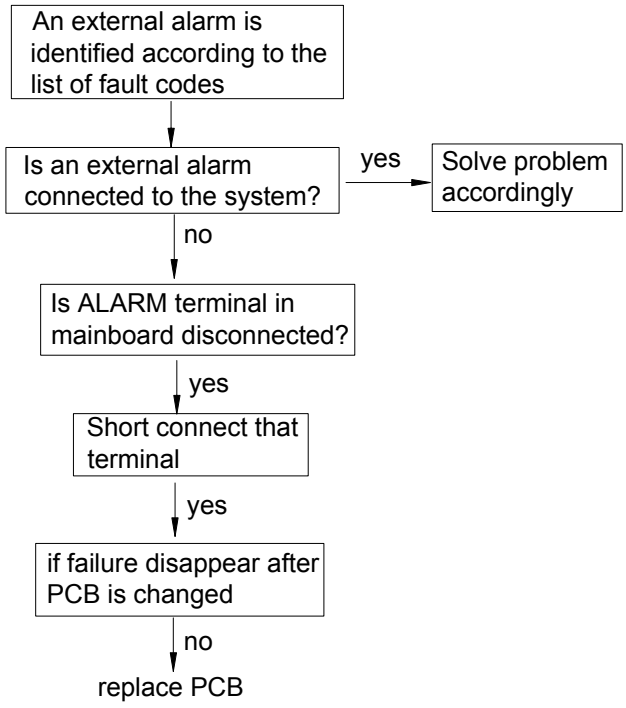
6) Communication failure between wired controller and indoor PCB or no display on wired controller


Confirm commumication failure according to the fault code list or no display
check if the wired controller can match with indoor PCB
no
replace wired controller
yes
Is power just turned on?
yes
for some models, when powered on, initialization will display 88, if initrialization cannot finish, check indoor dip switch position
no
Is voltage between A and B of wired controller 12V?
yes
Is voltage between B and C fluctuating?
yes
check if the dip switch position on PCB is right
yes
replace PCB
no
no
no
correct the position
Is supply transformer or 7812 component in good condition?
yes
check if wiring is correct
no
check if failure disappears after changing transformer or PCB
no
check if failure disappears after changing wired controller
yes
wired controller is broken

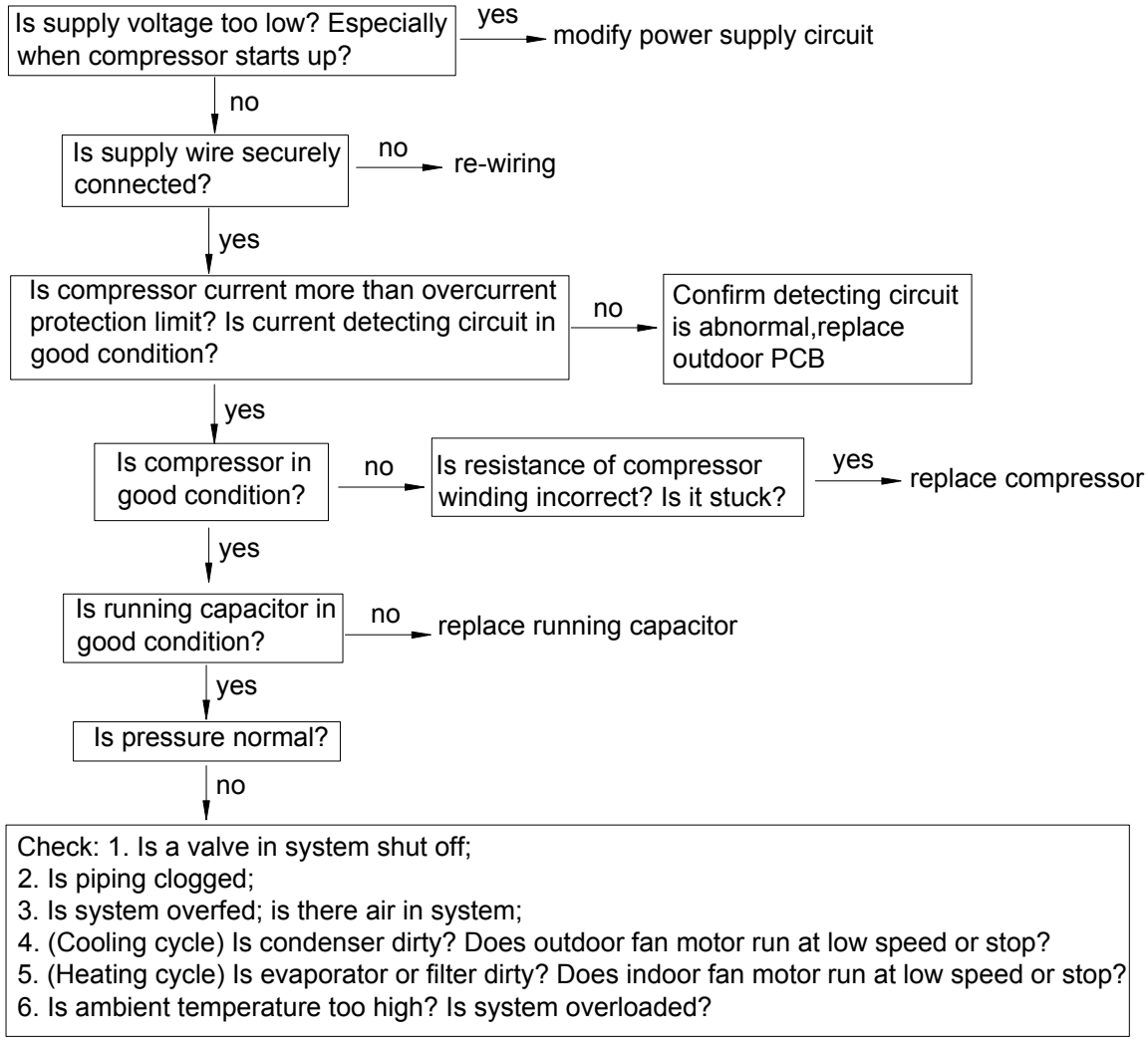
7) High current protection in 3-phase fixed frequency models


Is three-phase circuit not balanced? Is supply voltage too low? Is supply voltage too low at compressor start-up?
yes
Modify power supply circuit
yes
Is power cable or compressor wire securely connected? Properly?
no
re-wiring
yes
Is compressor current more than overcurrent protection limit? Is current detecting circuit in good condition?
no
Confirm detecting circuit is abnormal,replace outdoor PCB
yes
Is AC contactor in poor contact?
yes
replace AC contactor
yes
if compressor is normal
no
Is resistance of compressor winding incorrect? Is it stuck?
yes
replace compressor
yes
if pressure is normal
no
Check: 1. Is a valve in system shut off;
2. Is piping clogged;
3. Is system overfed; is there air in system;
4. (Cooling cycle) Is condenser dirty? Does outdoor fan motor run at low speed or stop?
5. (Heating cycle) Is evaporator or filter dirty? Does indoor fan motor run at low speed or stop?
6. Is ambient temperature too high? Is system overloaded?

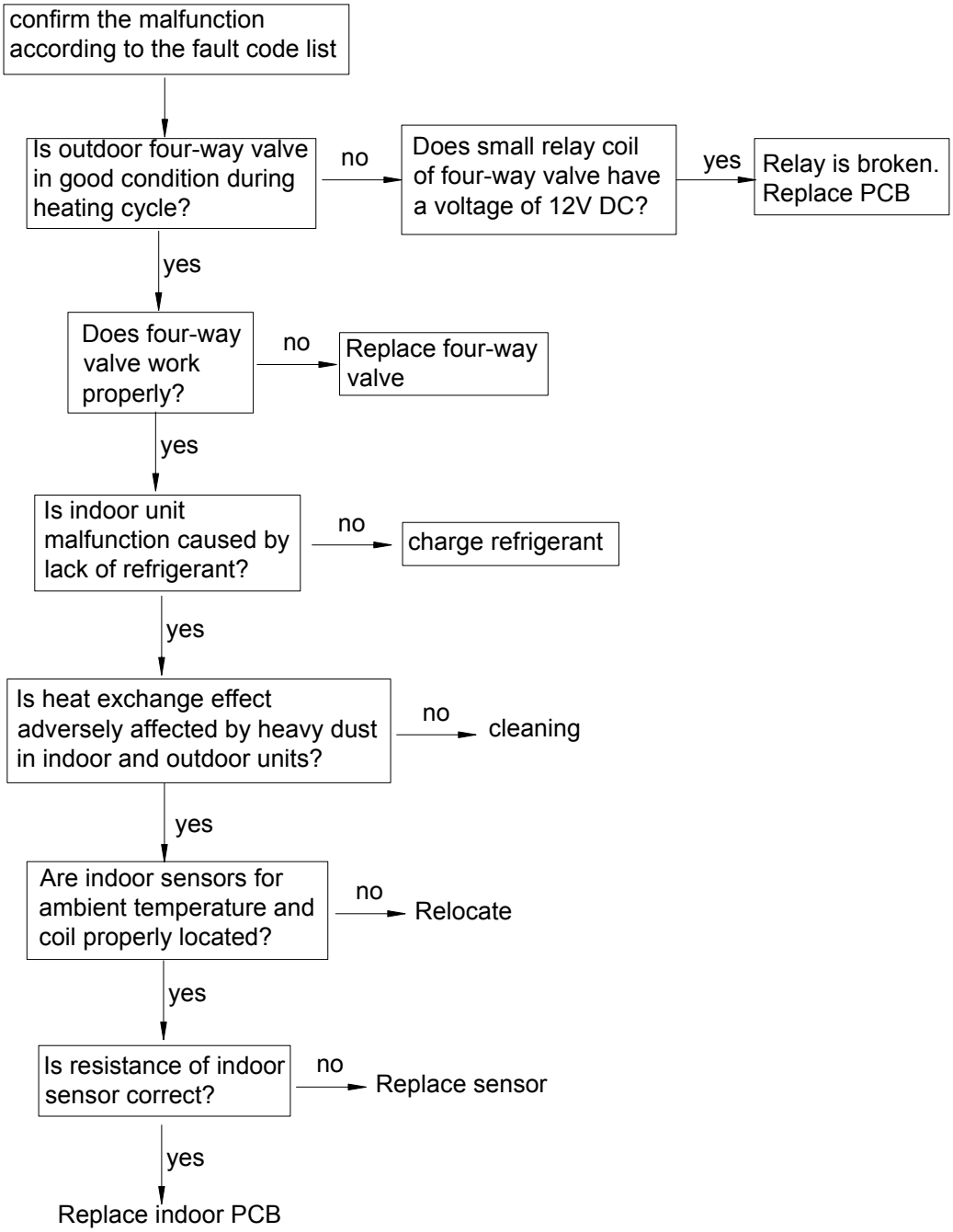
8) External alarm



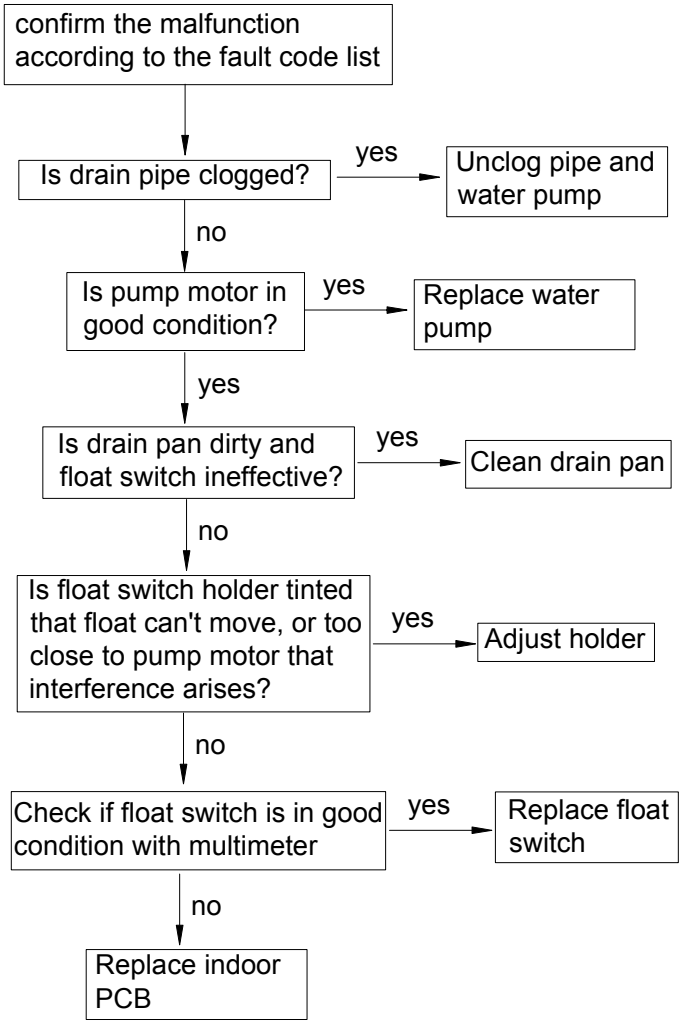
9) Overcurrent protection for single-phase fixed frequency models


Is supply voltage too low? Especially when compressor starts up?
yes
modify power supply circuit
no
Is supply wire securely connected?
no
re-wiring
yes
Is compressor current more than overcurrent protection limit? Is current detecting circuit in good condition?
no
Confirm detecting circuit is abnormal,replace outdoor PCB
yes
Is compressor in good condition?
no
Is resistance of compressor winding incorrect? Is it stuck?
yes
replace compressor
yes
Is running capacitor in good condition?
no
replace running capacitor
yes
Is pressure normal?
no
Check: 1. Is a valve in system shut off;
2. Is piping clogged;
3. Is system overfed; is there air in system;
4. (Cooling cycle) Is condenser dirty? Does outdoor fan motor run at low speed or stop?
5. (Heating cycle) Is evaporator or filter dirty? Does indoor fan motor run at low speed or stop?
6. Is ambient temperature too high? Is system overloaded?

10) Temperature cutoff protection

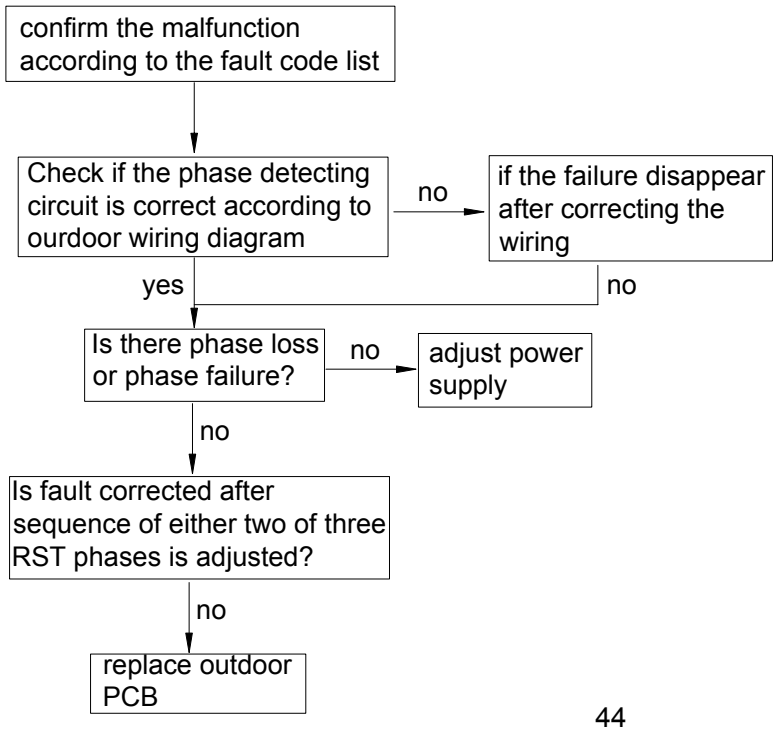


11) Fault in drain system

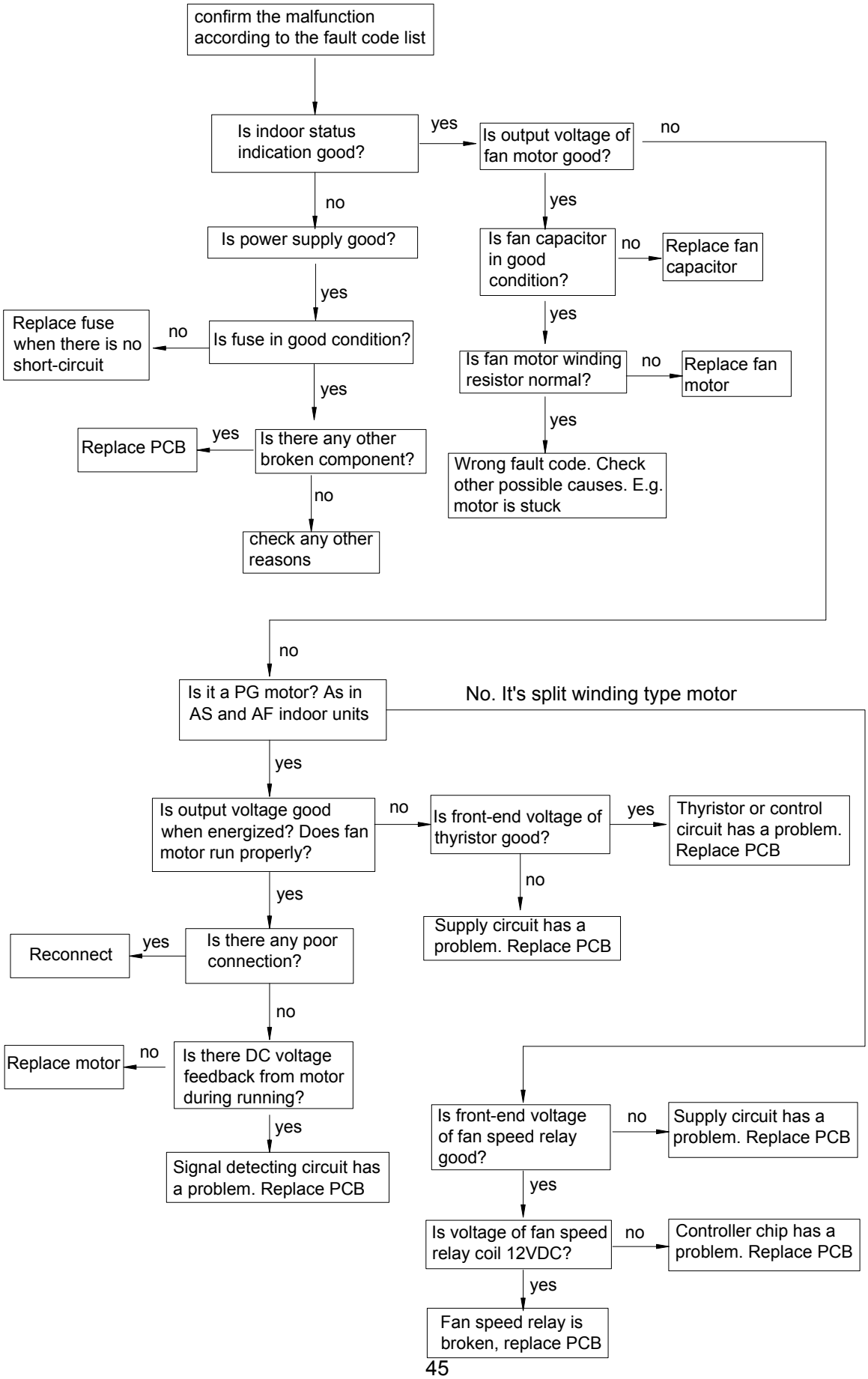


Note: Float switch is close in normal state, when being activated, it is open. Voltage between both ends is 0V when close, approximately 5V when open.

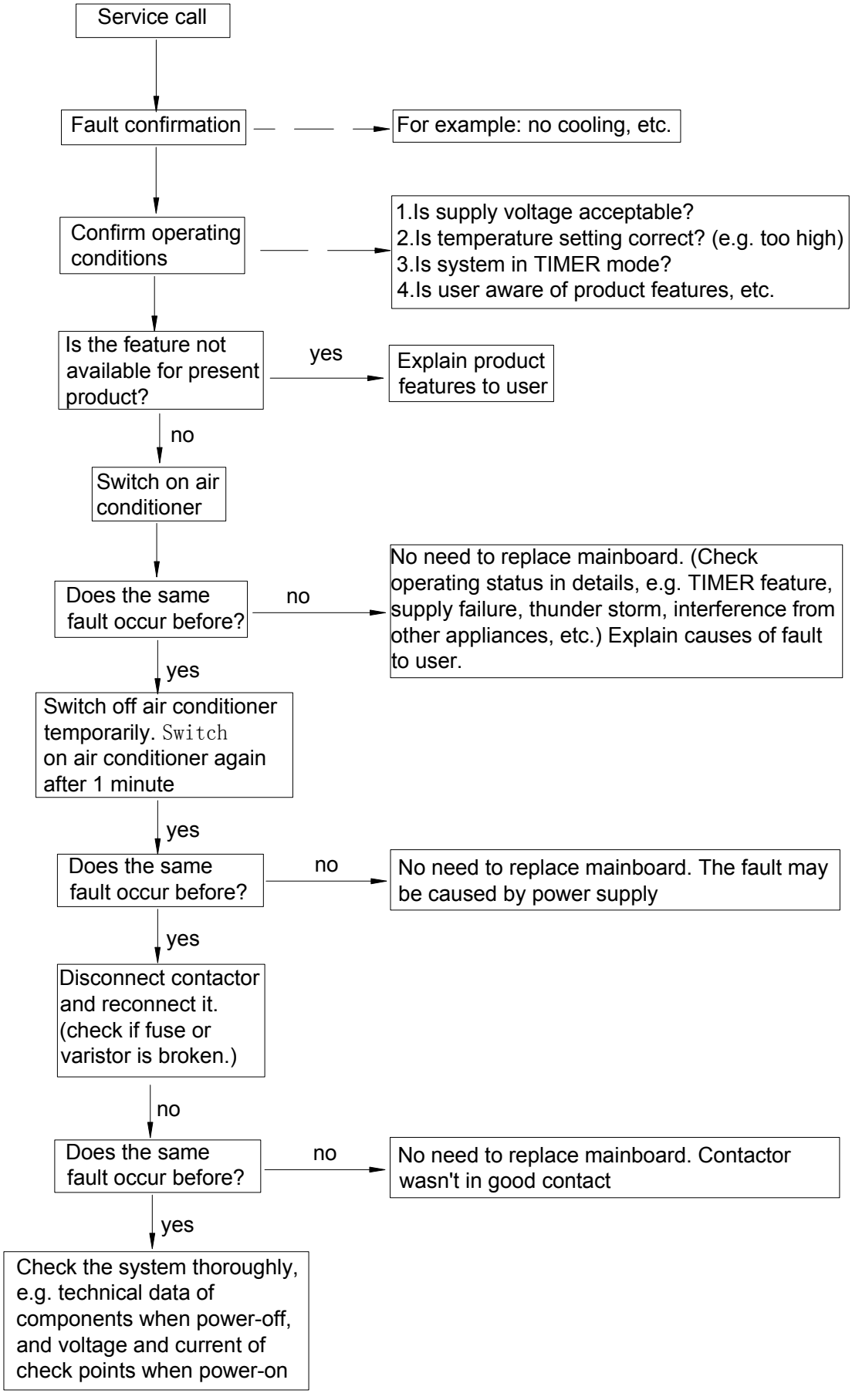
12) Phase loss or phase failure


confirm the malfunction according to the fault code list
Check if the phase detecting circuit is correct according to ourdoor wiring diagram
no
if the failure disappear after correcting the wiring
yes
no
Is there phase loss or phase failure?
no
adjust power supply
no
Is fault corrected after sequence of either two of three RST phases is adjusted?
no
replace outdoor PCB

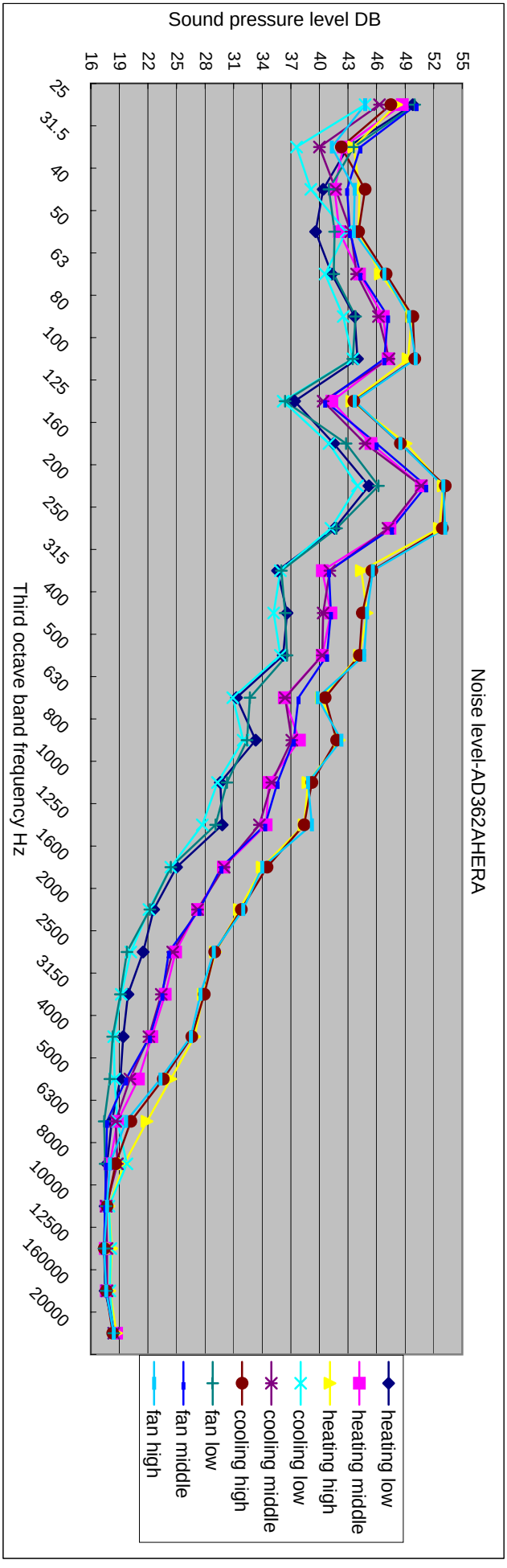
13) Fault in indoor fan motor

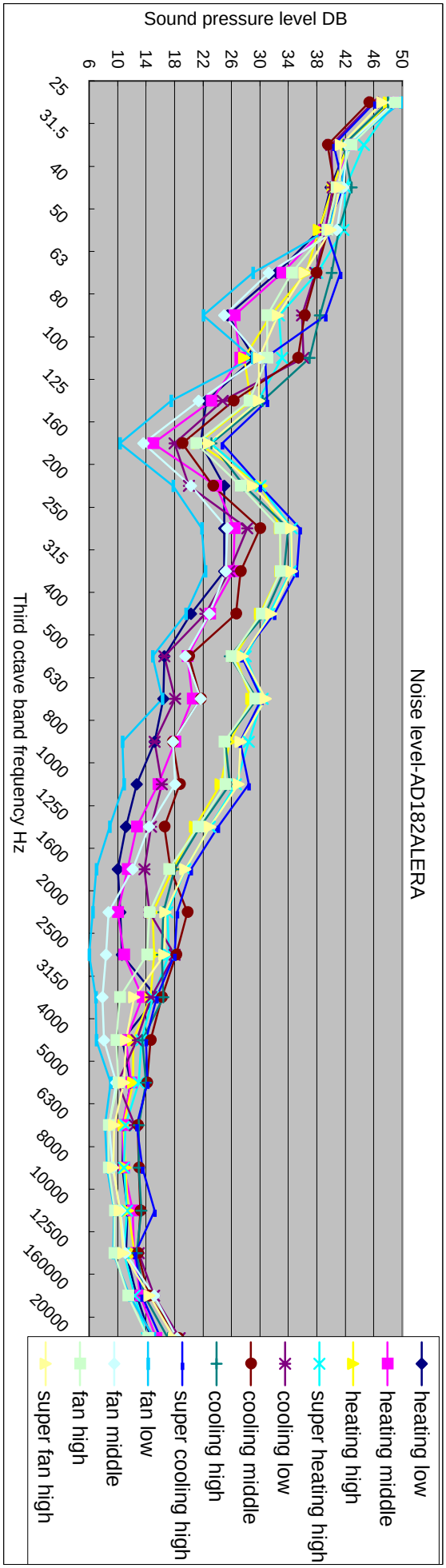


14) Troubleshooting (before replacement of PCB)


Service call
Fault confirmation
For example: no cooling, etc.
Confirm operating conditions
1.Is supply voltage acceptable?
2.Is temperature setting correct? (e.g. too high)
3.Is system in TIMER mode?
4.Is user aware of product features, etc.
Is the feature not available for present product?
yes
Explain product features to user
no
Switch on air conditioner
Does the same fault occur before?
no
No need to replace mainboard. (Check operating status in details, e.g. TIMER feature, supply failure, thunder storm, interference from other appliances, etc.) Explain causes of fault to user.
yes
Switch off air conditioner temporarily. Switch on air conditioner again after 1 minute
yes
Does the same fault occur before?
no
No need to replace mainboard. The fault may be caused by power supply
yes
Disconnect contactor and reconnect it. (check if fuse or varistor is broken.)
no
Does the same fault occur before?
no
No need to replace mainboard. Contactor wasn't in good contact
yes
Check the system thoroughly, e.g. technical data of components when power-off, and voltage and current of check points when power-on

11. Noise level charts


Noise level-AD362AHERA
Sound pressure level DB
16 19 22 25 28 31 34 37 40 43 46 49 52 55
Third octave band frequency Hz
25 31.5 40 50 63 80 100 125 160 200 250 315 400 500 630 800 1000 1250 1600 2000 2500 3150 4000 5000 6300 8000 10000 12500 160000 20000
heating low
heating middle
heating high
cooling low
cooling middle
cooling high
fan low
fan middle
fan high


Noise level-AD182ALERA
Sound pressure level DB
6 10 14 18 22 26 30 34 38 42 46 50
Third octave band frequency Hz
25 31.5 40 50 63 80 100 125 160 200 250 315 400 500 630 800 1000 1250 1600 2000 2500 3150 4000 5000 6300 8000 10000 12500 160000 20000
heating low
heating middle
heating high
super heating high
cooling low
cooling middle
cooling high
super cooling high
fan low
fan middle
fan high
super fan high

Sincere Forever

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